The World's Work

ARTHUR W. PAGE, EDITOR

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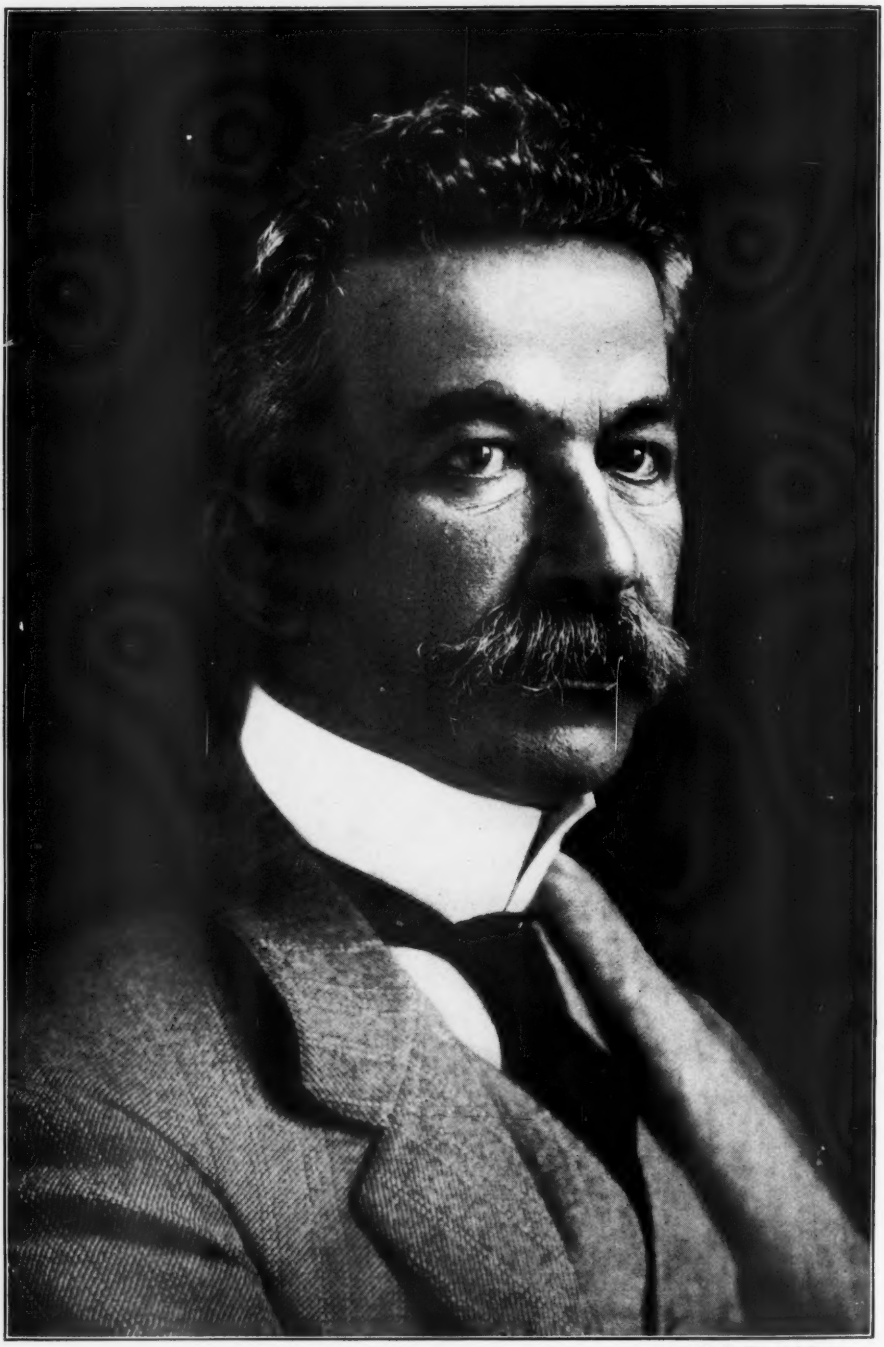

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MR. DOMICIO DA GAMA

THE BRAZILIAN AMBASSADOR TO THE UNITED STATES WHO, AS THE RANKING REPRESENTATIVE OF ARGENTINA, BRAZIL, AND CHILE, WAS THE SPOKESMAN OF THOSE POWERS IN THE OFFER TO MEDIATE BETWEEN THIS COUNTRY AND MEXICO

THE
WORLD'S WORK

JUNE, 1914

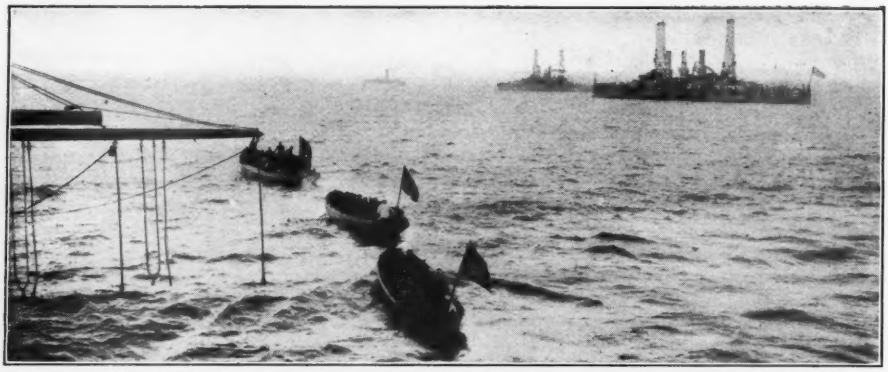
VOLUME XXVIII NUMBER 2

THE MARCH OF EVENTS

MEXICO is rapidly forcing us to clarify our international position. The war south of the Rio Grande was the event that vitalized the Monroe Doctrine to cover an active responsibility for the countries immediately south of us — Central America and the island states of the Caribbean.

When the Argentine, Brazil, and Chile offered their services as mediators in the Mexican question, and the offer was accepted by our Government, another far-reaching definition was added to the present Administration's interpretation of the Monroe Doctrine. Our acceptance of mediation by the three great South American Powers would certainly seem to mean that they are no longer subject to an active Monroe Doctrine — that they are not open to European aggression or such internal disturbance as warrants outside interference. Their progress and prosperity is the guarantee of the maintenance of the principles of the Monroe Doctrine in South America. If our assistance were needed of course we should give it, but so long as it is not needed a standing offer of assistance in the shape of the Monroe Doctrine seems a little condescending and irritating and has been so regarded. There could hardly be a happier way of removing this irritation than to receive assistance from these countries. The proper recognition of the achievements of the South American countries cannot in any way lessen the force of the fundamental idea underneath the Monroe Doctrine — that the Americas are for the Americans. On the contrary, it adds defenders to the principle. Moreover, the acceptance of mediation from the South American countries is another evidence of the good faith of our disclaimer of territorial ambitions.

Conditions in Mexico make necessary our interference in one way or another. It is most important for us to prove to the Mexican people, to South America, and to Europe that our actions are disinterested. Without discussing in the least the propriety or the impropriety of our territorial acquisitions in 1898 or the taking of the Panama Canal Zone, it is a fact that these events have made all Latin America look upon us somewhat apprehensively. It is a happy sign, therefore, that, when a situation like the present one arises which would normally add to that apprehension, we are able to have the friendly assistance of the Argentine, Brazil, and Chile. For



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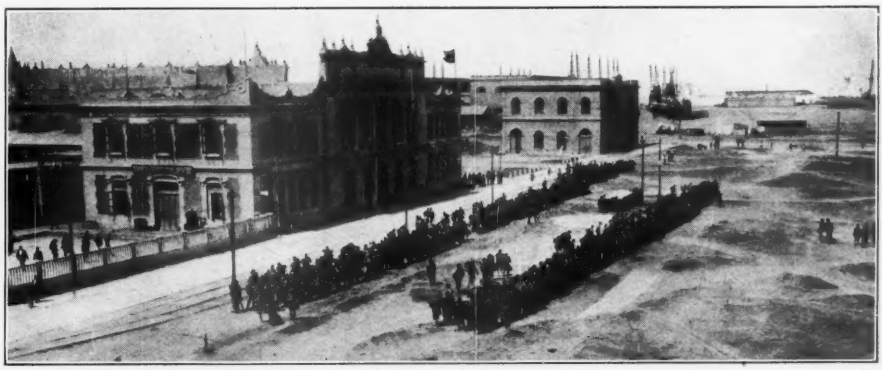
THE TAKING OF VERA CRUZ

UPPER PICTURE. MARINES PUTTING OFF FROM AN AMERICAN BATTLESHIP TO OCCUPY VERA CRUZ. MIDDLE PICTURE: THE MARINES ENTERING THE CITY. LOWER PICTURE: MEXICAN SOLDIERS RESISTING THE ADVANCE OF THE AMERICANS



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BY AMERICAN MARINES

UPPER PICTURE: ARRESTING MEXICAN SHARPSHOOTERS WHO RESISTED THE OCCUPATION. MIDDLE PICTURE: THE AMERICAN MARINES DRAWN UP IN A PUBLIC SQUARE OF VERA CRUZ. LOWER PICTURE: AN INCIDENT IN THE ARREST OF MEXICAN "SNIPERS"

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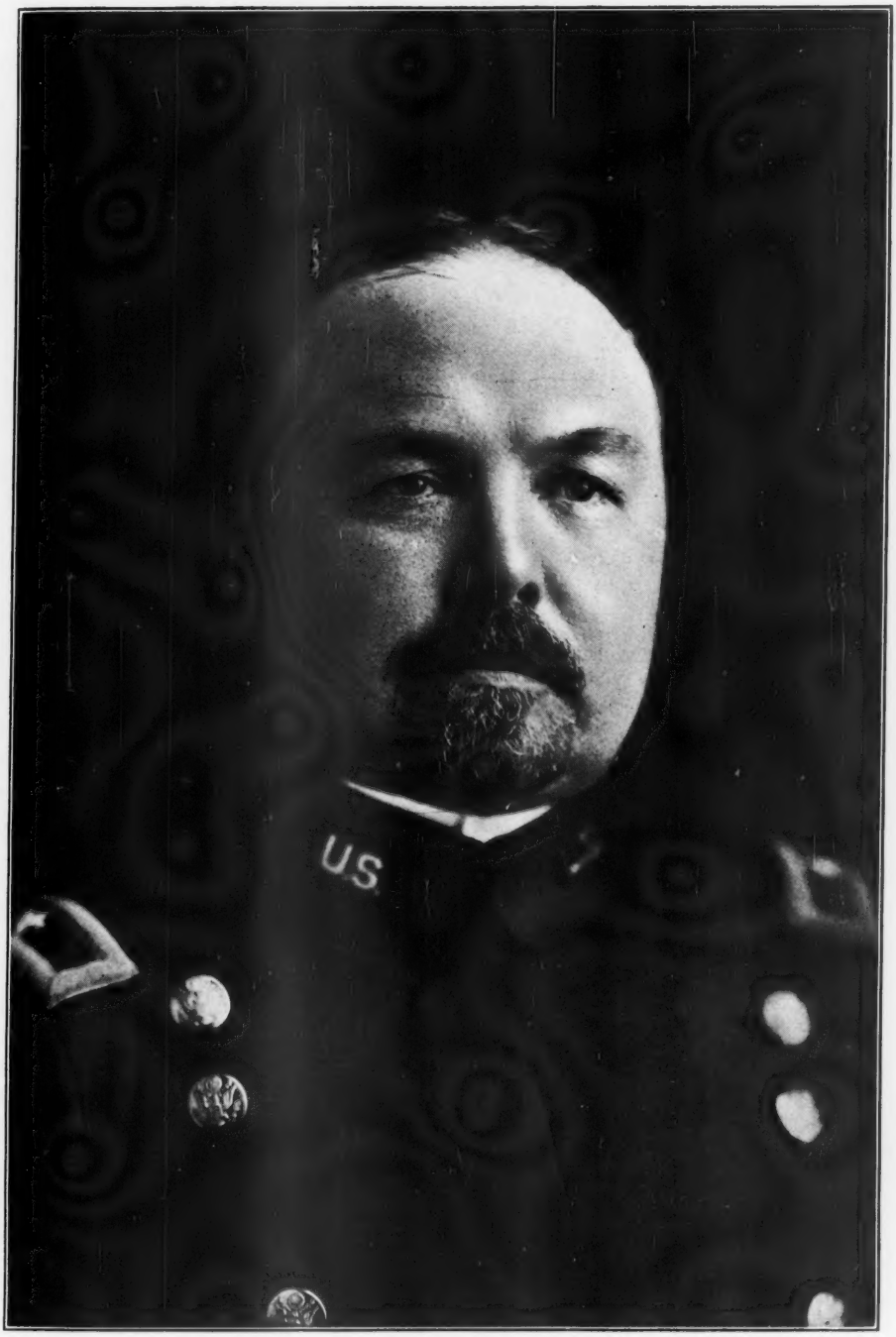
REAR-ADMIRAL HENRY T. MAYO

WHOSE DEMAND THAT GENERAL HUERTA MAKE FULL REPARATION FOR THE ARREST OF SAILORS FROM THE "DOLPHIN" AT TAMPICO LED TO THE ARMED DEMONSTRATION AGAINST THE PROVISIONAL GOVERNMENT OF MEXICO



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BRIGADIER-GENERAL FREDERICK FUNSTON

IN COMMAND OF THE AMERICAN TROOPS THAT RELIEVED THE MARINES AT VERA CRUZ

MAJOR-GENERAL LEONARD WOOD

WHO, WHILE HE WAS CHIEF OF STAFF OF THE UNITED STATES ARMY, DIRECTED THE PREPARATION OF COMPLETE PLANS FOR ALL MILITARY OPERATIONS THAT MAY BE NECESSARY IN MEXICO, WHICH HE IS DESIGNATED TO COMMAND

they would hardly take the action which they have taken, unless they were convinced that our intentions toward Mexico were disinterested and that none of the implications of "Dollar Diplomacy" actuated our efforts.

The nearest approach to this present development in Pan-Americanism was the suggestion of Senator Root when Secretary of State that the Argentine, Chile, Brazil, and Mexico should be monitor nations for Latin America; and, curiously enough, under this arrangement Mexico actually did put a stop to an entanglement between Nicaragua and Honduras.

In the present Mexican difficulty the Argentine, Brazil, and Chile have from the beginning acted with the United States in refusing to recognize Huerta, and it is significant that when our chargé d'affaires left the City of Mexico he left our embassy in the hands of the Brazilian Minister there.

The most far-reaching effect of the mediation, then, is not the effect upon the immediate problem in Mexico but the new aspect it puts upon our relations with South America and the confidence it inspires in our disinterestedness. It will not, of course, remove all prejudice against us in South America, but it is a very large and important step in that direction and it aids us in future efforts to help Central America that may become necessary.

OUR ARMS AND AIMS IN MEXICO

THE mediation proposals of the South American countries were immediately helpful, for they brought about an armistice during which the American refugees in Mexico City and elsewhere in the interior could escape under less dangerous circumstances than would otherwise have been possible.

Even as it was, many hundreds of these unfortunates owe their escape to the prompt and friendly action of the British naval forces which brought out many who were in serious danger from places outside the reach of our troops. Not only have the British actively aided our refugees, but the Japanese embassy in Washington had the courtesy and tact not to accept the invitation of the Mexican chargé d'affaires, Señor Algara, to take charge of the business of the Mexican legation when he received his passports.

The Mexican situation, serious as it is, is not a question by itself. It is a part of our shouldering of the responsibilities of the Monroe Doctrine. We have said to Europe: "Hands off the countries of Central America and the Caribbean. These people must govern themselves. If they cannot do it alone, and need teaching, we'll do the teaching."

We have been patient in the hope that Mexico could attend to itself. We hope that it will be able to attend to itself with as little teaching from us as possible. After the elimination of the Huerta dictatorship is accomplished there still remains the constructive task of building up a government in Mexico which is strong enough to govern, wise enough to adopt the measures of reform (especially the land laws) necessary to keep the popular support, and adroit enough to keep the North and South of Mexico (which are very different) in harmony. If there are men in Mexico to do this heroic task we should give them every encouragement in it. If there are not, we are in better shape to help Mexico than we were to help Cuba, for the men who gained experience in constructing the Cuban government are available for service in Mexico. Either without our assistance or with it (preferably without), a proper Mexican government must be established. This is the one fact which should not be lost sight of. It is the permanent and fundamental background of the whole situation.

Mexico must govern itself. That means that we do not want and cannot have a foot of Mexican territory. Mexico has been an expensive neighbor for the last two or three years. It seems likely to be

OPERATIONS THAT MAY BE NECESSARY IN MEXICO, WHICH HE IS DESIGNATED TO COMMAND

more so in the near future, but we cannot afford to reimburse ourselves for this expense by taking territory. If, out of this turmoil, a stable, decent government arises in Mexico, that will pay us well for our efforts. A contented and prosperous neighbor is of infinite value to us. A province of alien problems territorially attached to the United States would be for us the worst inheritance of an unrighteous war, for if we have a war of conquest it will be an unrighteous war.

There is no question but that the bulk of the people are with President Wilson in his disclaimer of any intention to take any territory. There are a few people, however, and among them people who have large private interests in Mexico, who are urging a war of conquest. To carry on a propaganda of this kind in this country is serious enough. But its effect in Mexico is far worse. Consider the effect on the minds of Mexicans who see the papers owned by Americans who are large landholders and concessionaries urging war with Mexico. They cannot help feeling that the war wanted is a war of conquest. It is such people who make the Constitutionalists in the North nearly as suspicious of the United States as they are of Huerta. The Americans who are for war for private gain have been so much in evidence that they have greatly increased the difficulties of our relations with Mexico and have given Huerta the very material that he needed upon which to make his statement that "Mexico is defending not only her national sovereignty but that of all Latin America as well."

It may cost us blood and treasure to prove to Pan-America that that statement is a lie, and a part of that cost belongs to men who have given Mexicans reason to believe that the United States will engage in a war of conquest. If their consciences are clear that what they have done was done from purely patriotic motives their honest errors have cost this country dearly. If private gain has influenced the course they have pursued, even a merciful justice will not exonerate them.

In carrying out our policy of trying to allow Mexico to settle its own difficulties, we showed a long patience, under very trying circumstances, until at last General Huerta's attempts to embroil the United States succeeded. Whether he felt that our patience was fear and our attitude a "bluff," or whether he was merely playing his last card, probably he alone knows. The arrest of the American sailors was deliberate. Admiral Mayo's demand for a salute was in accord with international usage. We ourselves once sent a warship to Rio Janeiro for the very purpose of tendering such an apology to Brazil for a mistake made by an American officer. The Government had no alternative but to support Admiral Mayo, and even while Congress was discussing the question of giving the President its sanction to use the Army and Navy of the United States, the Navy took Vera Cruz.

Then came a short period of acute tension when no one knew whether the followers of Villa and Carranza would accept the President's statement that the taking of Vera Cruz was not an act hostile to the Mexican people but merely toward Huerta. Carranza's first note about the incident at Vera Cruz intimated a hostile attitude. Villa, with some of his troop trains, started north from Chihuahua to Juarez. Across the river from Juarez at El Paso were two or three thousand Mexican Federal soldiers under the guard of the American garrison. If Villa had joined Huerta against the United States and had made a sudden attempt to release these prisoners, a war of intervention would almost certainly have followed immediately. This particularly delicate situation passed away when Villa announced that he would keep peace with the United States.

In our effort to eliminate Huerta as the possible basis of the establishment of a proper government, we patiently tried non-recognition and diplomatic pressure. After that the steps are fairly clearly marked out — a blockade, mediation, a punitive expedition to the City of Mexico, a complete intervention such as we had in Cuba. It seems to be the policy of the Administration to take each step only when it becomes absolutely clear that the one before will not work. That is, of course, as it should be, but it is also gratifying to know that, even if the final step is

necessary, we have the machinery to do the task efficiently. The United States Army and Navy are in a better state now than they have been at the beginning of any war since the founding of the Nation.

When the order came, on the morning of Tuesday, April 21st, to take Vera Cruz, Admiral Fletcher proceeded to occupy that city with a precision and despatch which were eloquent of careful preparation. Twenty-four hours after his first boatload of marines from the *Prairie* had jumped ashore, Vera Cruz was in our hands and the custom house, Huerta's principal source of income, was under American administration. After the brief shooting was over, not only were there no subsequent disorder and confusion, but that Mexican seaport passed at once into a régime of unprecedented order and sanitation. Shopkeepers and householders unbarricaded themselves to find that the "Gringoes," who with rifles and bayonets had forcibly taken possession of their city, were actually cleaning and policing its streets.

All along the line, from naval station and at sea, telegraph and wireless brought instantly alert, obedient response, so

THE LINES OF APPROACH TO MEXICO CITY

THE RAILROAD CENTRES OF TORREON, SALTILLO, AND MONTEREY ARE THE STRATEGIC POINTS IN CENTRAL MEXICO, FOR EXCEPT THROUGH THEM NO ARMY CAN MOVE NORTH OR SOUTH. TAMPICO AND MAZATLAN COMPLETE THE LINE WHICH THE CONSTITUTIONALISTS UNDERTOOK TO ESTABLISH. THE STRATEGIC POINT IN THE SOUTH, OF COURSE, IS VERA CRUZ

that within eighteen hours from the time the pale-faced President folded back the last typewritten sheet of his "war" message, the whole Navy establishment was operating perfectly in relation to the Mexican situation.

Admiral Fletcher's readiness at Vera Cruz was simply the most conspicuous instance of naval readiness. The Army's preparedness, less impressive at first because its visible action was properly delayed from Washington, was nevertheless no less thorough. Just one week after Admiral Fletcher's gray launches, "in the face of an approaching norther," landed his fighting marines and sailors on the wharves of Vera Cruz, General Frederick Funston steamed into the harbor with four white transports from Galveston and put his Fifth Army Brigade, visibly dejected by the news of mediation, peacefully ashore.

The transfer of command from the Navy to the Army was made in accordance with a despatch from the Secretary of War to General Funston appropriately recognizing the Navy's efficiency as follows:

> The Secretary of War is explicitly requested by the President to say to you that the President entirely approves in every respect of the course which Admiral Fletcher has pursued in the occupation, control, and management of the city of Vera Cruz since his landing; that he has the greatest confidence in Admiral Fletcher's judgment; has learned to depend upon his long acquaintance with the situation for guidance, and desires that you keep in close touch and consultation with the Admiral and seek to continue in intimate harmony with the policy he has initiated there except so far as change of circumstances may demand a different course.

This despatch is also worth quoting because it phrased promptly at the start of operations in Mexico the necessity for coöperation between the Army and the Navy, a coöperation which was almost entirely lacking in the Spanish War.

The first outward and visible evidence of the preparedness of the Army came with the embarkation of General Funston's reinforced brigade at Galveston. The same correspondents who had witnessed the confusion at Tampa in 1898, when regiment after regiment scrambled aboard coast-trade steamers, devil take the hindmost, marked and recorded the change. For many months the Second Division, from which the Fifth Brigade was chosen, had been mobilized at Galveston, and those months had been spent in long practice marches in full service kit, in manœuvres under war conditions over the same kind of lands as Mexico, and in long hours on rifle ranges. Every man of that Division was fit and ready to move when, on the night of April 23d, a telegram broke up an officers' dance at the Hotel Galvez and sent the Adjutant-General's motor car honking out to headquarters, and provost guards, sticking their heads into "movies," saloons, and billiard parlors, brought the missing men in khaki joyfully back to camp.

At daybreak on the following morning the chosen regiments of the Fifth Brigade broke camp, marched down to the docks, and embarked aboard four Army transports ready to receive them. As Richard Harding Davis, whose standards come of many wars, wrote as a witness, "They embarked in a manner to give credit to their officers and pride to the taxpayers."

During the months when the country at large ignored the Mexican situation, the General Board of the Navy and the General Staff of the Army were perfecting plans for possible intervention in Mexico. How thoroughly these plans were made has been demonstrated at Vera Cruz, Galveston, and in the mobilization centres in the United States. Many months ago these plans were perfected, and since then, as from day to day additional information is received, they are kept up to date. So it happened — after Huerta defied our ultimatum in the South, and Carranza in the North seemed temporarily to regard our military acts of April 21st-28th (specifically defined, as they were, against the Huerta government *only*) as belligerency against the whole of Mexico — that it would have been possible to throw the Regular Army into action at approximately the same time and without confusion on the line from Vera Cruz to Mexico City and along the Rio Grande. The marble halls of the War Department, which in April, 1898, had

been jammed and tumultuous with panic, remained as tranquil in the April days of 1914 following the President's request for the use of the Army and Navy as they had been in the routine weeks before. This state of preparedness reflects the highest credit on the efficiency of the General Staff and on the general advance in mobility and coöperation in the various branches of the Army since the Spanish War of 1898. It adds to the Nation's sense of security to feel that its armed forces are in such competent hands and are animated by such a spirit.

In time of war the activities of the military establishment embrace (*a*) what is called *The Service of the Interior*, which means the vital organs of the Army: commissary depots, arsenals, hospitals, etc., mobilization and concentration camps, the bureau chiefs in Washington who advise the Secretary of War in the technical details of their several departments; and (*b*) *The Service in the Theatre of Operations*.

The latter, though no more important than the comparatively obscure half of an army's operations, constitutes the vivid side of the war, that side which becomes more and more familiar to the public in names of men and regiments at the front. At present the fighting service is under the command and direction of Major-General Leonard Wood, who by an odd coincidence finished his term as Chief of Staff of the United States Army on April 22d, the very day on which Congress passed its joint resolution upholding the President. Long before Admiral Mayo's boat's crew were arrested at Tampico, General Wood had been designated by the War Department for this possible service. He had already picked his staff officers, each of whom during the latter days of April were packed up and ready to move on a half-hour's notice, and with them he had constantly rehearsed a concerted scheme of operations on Mexican soil.

General Wood has a peculiar fitness for the constructive as well as the destructive work of a Mexican campaign — a fitness gained by his service in the Philippines and in Cuba. In both cases, but particularly in the two interventions in Cuba, he made a record as an administrator that well justified the phrase with which he received his honorary degree at Harvard as "the restorer of a province." General Wood understands the Latin and Indian characteristics. He unites with fighting qualities patience and a rare ability, gained by twenty years' experience, in reconciling alien peoples to new ways of living and working. He is at once a military destroyer and a civil restorer.

It is also fortunate that with him as chief is a group of subordinates, many of whom have served under him in war and in the upbuilding administrative labors of peace.

Any American army in the field now would benefit by a higher degree of coöperation with the War Department and would get far abler direction from it than our armies have had in the past. In the Civil War, for example, General Halleck in Washington was always at odds with the generals in command in the field. In 1898 the War Department and the field army organization broke down so that military operations were undertaken on foreign soil without proper information, plans, commissariat, or hospital equipment. Our combination regular and volunteer armies suffered accordingly.

It was this very failure which caused Mr. Root, when Secretary of War, to look into the causes of the Army's inefficiency. The result of his investigation was a thorough reorganization. The General Staff was created, the War College established, and a proper system of coördination between Washington and the firing line solidly founded.

At present, for example, if General Wood were to take the field, General Wotherspoon, who was, before April 22nd, his assistant and has now succeeded him as Chief of the General Staff, would be in full coöperation with his late chief. General Wotherspoon, as well as General Wood, knows both the fighting and the constructive, government-building tasks of an army of intervention, for, besides his service in the Philippines, he was chief of staff under General Wood in our second expedition to Cuba.

Such is the type of commanding officer

— Wood, Wotherspoon, Scott, Funston, Bell, Bailey — that Mr. Root's reforms bring now in time of national emergency to the posts of responsibility. The days of a comfortable, all-powerful bureaucracy are over and the Army may now, when it is called upon, benefit in its direction by a preparedness as complete as possible within the limits imposed by Congress and by a thorough mutual understanding in carrying out prearranged plans.

In addition to the Second Division which, with the exception of Funston's Fifth Brigade, reinforced at Vera Cruz with artillery, cavalry, and signal corps to 5,000 men, was mobilized at Galveston, the Regular Army has available a cavalry division scattered along the northern border of Mexico, the First Division distributed in various posts along the Atlantic seaboard, and the Third Division stationed on the Pacific seaboard. These divisions are already provided with arms, ammunition, and supplies for the initial stages of a campaign in Mexico, although their prompt transport might be affected by the constitutional unwillingness of Congress to provide material for war before war actually begins.

This is merely one phase of the difficulty which has always hampered the Army and which in time of war becomes a serious weakness. And that difficulty is inherent in our institutions. In this Mexican crisis, as so many times before, it has already been found impossible to deal with the problems that confront the Army as military problems. They are for us political problems also. Throughout the present crisis Congressmen and Senators have been deluged with telegrams and letters from their constituents with regard to the disposition of forces; a brigade has been detached from its division and sent to El Paso, another brigade of cavalry into Colorado; the Pacific Coast wants to keep the regiments composing the Third Division at their home stations. The best-laid military plans may be weakened by political considerations, and of the fifty thousand regulars available for duty in Mexico on May 1st not even the Secretary of War could make a sure estimate of the number that could be counted on in the event of active intervention in Mexico.

The line next to the Regular Army consists of the militia of the various states. Under the provisions of the new Volunteer Act, passed by Congress during the acute stage of the Mexican crisis in the last days of April, the National Guard of every state can be mobilized at centres already designated from which they may be concentrated with the militia of other states at large camps chosen with especial reference to their access to Mexico. Each state centre has been chosen primarily, not for the commercial advantages to the inhabitants thereof, but on the merits of the locality as a healthy camp site for large bodies of troops, convenient for supplies and transportation. The average person has never heard of many of these places. Under the old Dick law, still in force, the militia organizations must be accepted as units, but the new Volunteer Act will divorce them even in name from the states in which each regiment was recruited, and make of the additional 121,000 troops thus nominally available a Federal Reserve to be restandardized on a Regular Army basis and so drafted into active service. The regiments will not officially be known, as in the Civil and Spanish wars, by their respective state designations — the Twelfth Massachusetts or the Tenth Nebraska — but as the Thirty-fifth or Forty-second regiments, U. S. A.

The great weaknesses of the National Guard Divisions are (1) that they have not manœuvred as complete tactical units, and, (2) that the standard of enlistment is low in several states and that the men lack individual training. A rigid inspection has proved that nearly one fifth of the militia are physically unfit for service with the colors and that actually 60 per cent. of the men that are armed with rifles have not qualified in the lowest class of marksmen. A big cleaning out and some months of training of what is left would be necessary before this nominal strength of more than one hundred thousand men could be sifted down to an effective reserve force of two thirds or three fourths of that number. Here again, even more severely than in the Regular Army, we face the consequen-

ces of a military establishment weakened by a political control.

For whatever we do in Mexico there will be grudging credit and no immediate glory — only the quiet and enduring praise which may come long afterward if our efforts shall result in bringing to a tortured neighboring people a greater ultimate freedom than any they have yet enjoyed. If we do this and get out clean-handed, we shall have added to our Cuban chapter another example of what no other nation has done before. And as we patiently await the development of Mexico's ultimate attitude, which may force upon us many years of police duty, it should be a satisfaction to the Nation to know that our aims are unselfish and that our arms, even with their defects, are prepared as never before to carry those aims to a successful conclusion.

THE EIGHTEENTH AMENDMENT

MOST people thought, after the income tax and senatorial election amendments had been added to the Federal Constitution, that that inflexible document could be left quietly in peace for another fifty years. Few realize, therefore, that we are now rapidly approaching the Eighteenth Amendment; fewer still have any idea of the question with which it deals. The Anti-Saloon League of America is now conducting a characteristically energetic campaign to make the following clauses part of our fundamental law:

Article XVIII

Section 1: The sale, manufacture for sale, transportation for sale, importation for sale, and exportation for sale of intoxicating liquors for beverage purposes in the United States and all territory subject to the jurisdiction thereof, are forever prohibited.

Section 2: Congress shall have power to provide for the manufacture, sale, importation, and transportation of intoxicating liquors for sacramental, medicinal, mechanical, pharmaceutical, or scientific purposes, or for the use in the arts, and shall have power to enforce this article by all needful legislation.

What is the likelihood that this will become law? Two thirds majority in each house of Congress must pass this amendment. After that, two thirds of the legislatures must ratify it. What signs are there that the prohibition sympathizers can command any such support?

They have recently given a striking illustration of their influence in Congress. Two years ago the Kenyon-Webb bill passed both houses. This law prohibits the shipment of alcoholic liquors from one state or foreign country into another state where it is intended to be used in violation of the laws of that state. The purpose, of course, was to prevent the transportation of liquors into a prohibition state — an end which, according to the temperance advocates, is rapidly being achieved. President Taft vetoed this bill. The temperance people, however, had no difficulty in getting together the necessary two thirds vote to pass the bill over the President's veto. Whatever the impartial citizen may think of the merits of such a law, one thing is clear enough — the enormous influence of the prohibition preachers in both branches of Congress. If they can muster the same support for their favorite amendment, it will pass.

When it comes to possible influence upon the ratifying legislatures, the situation is even more striking. A map published in the last issue of the *Year Book of the Anti-Saloon League* shows that the greater part of the country in territorial extent — in figures 2,132,746 square miles of 2,973,890 — is now under no-license laws. Of the 91,000,000 people in the country, 46,000,000 are living under no-license laws. In parts of certain states, a new generation is growing up that has never seen a saloon. The *National Liquor Dealers' Journal*, which is widely sounding the "alarm" against the temperance people, declares that there are twenty-seven state legislatures now ready to vote for a constitutional amendment making the outlawry of alcoholic drinks nationwide.

Inasmuch as the votes of only thirty-eight states are required, the prohibition people, at the present moment, need only eleven more legislatures to make the proposed change a reality. And the prohibition leaders, who are the most persistent, the most tireless, the most fanatical fighters, if you will, in the country, have hardly begun their campaign.

THE LITTLE COUNTRY THEATRE

THE Little Country Theatre is the name of an experiment that the North Dakota Agricultural College has been trying recently. Its purpose is to show that any rural community can give acceptable theatrical performances with "home talent," and that these performances can be made useful in socializing country life.

The College, for this purpose, has adapted a large room on the second floor of its administration building. The room is about the size of an ordinary country town hall. After building a stage thirty feet wide and twenty feet deep, the room will seat about two hundred people. Thus a play that can be produced here could be produced almost as well in a country school or church or even in the sitting room of a farm home.

Half a score of plays have been produced in this theatre. "Miss Civilization," "Country Life Minstrels," "Cherry Tree Farm," "A Fatal Message" — these are some of them. All are short, playing only about half an hour, as the purpose of them is as much to start the fun of a social evening as it is to divert. Most of the actors have been students from country homes, and several of them, having graduated, have written back for play-books so that they may produce their favorites in their own neighborhood.

The Little Country Theatre is a practical model for rural emulation. The theatre has been one of the influences that have attracted people away from the country. There is no reason why it should not attract them back to it again.

LESSONS OF A FARMERS' LOAN

NOT long ago a financial adviser in New York received a letter from a bank in Kansas, asking where it could place a note for $10,000, to run four months and signed by a dozen prosperous farmers. This seemingly commonplace incident is interesting in two ways. First, it shows very concretely the need of the new banking system's provisions for agricultural loans. At the time that this $10,000 was wanted, there was plenty of money in New York seeking employment, but under the old banking system there were difficulties in the way of making any of it available for Western farmers that could not quickly or easily be overcome. Under the new system, the Kansas bank could have given the farmers the money at once and sent the note on to the reserve bank of the district for re-discount.

The second interesting thing about this note for $10,000 is that it was coöperative borrowing. A dozen farmers signed it. It was much better security than twelve notes of $800 or $900 apiece would have been. Being better security, it deserved, of course, a lower rate of interest than the dozen notes would have paid.

These men represent a class of agricultural borrowers who suffer much from the lack of credit. It is to make adequate provision for such needs as theirs that the country has demanded a rural credit law. In the future there will doubtless be a well established market for farmers' joint notes — a class of "paper," as the expression is, which the bank in Kansas said it believed would find its way into the channels of business in increasing amounts under the new régime of coöperation among farmers in their financial transactions.

THE FACTS ABOUT 700 FARMERS

ONE of the most interesting contributions to the discussion about farming and living in the country appeared recently in a Bulletin (No. 41) of the Agricultural Department under the somewhat repellant title, "A Farm Management Survey of Three Representative Areas in Indiana, Illinois, and Iowa."

The authors of the paper, Mr. E. H. Thompson and Mr. H. M. Dixon, studied the complete records of 700 farms, and their studies show several facts, that are somewhat at variance with the usual popular notions.

In the first place they declare unqualifiedly that, at least so far as the Corn Belt is concerned, modern machinery, with the use of more horses and fewer men, has made the farm of less than 100 acres an inefficient unit. The 100-acre farm is the

best type of American farming and the type that we should foster. It needs large areas and is based on the maximum product per man, as contrasted with the European type which requires many men at low wages and which is based on the maximum product per acre.

The survey also found that the very large farms yielded less proportionately than the one-family 100-acre farm, because of the difficulties of management.

Even with the high prices of the last two or three years, farming is not a particularly lucrative business. The average labor income of the 273 owners who farmed was $408, and of the 247 tenants, $870. The farm owners had besides their labor income 35 per cent. interest on their investments.

Another common notion, that the tenant farmer is a shiftless and shifting individual, is contradicted by the facts of this survey. In the areas surveyed it was found that the average tenure was a little more than five years and that very often the reason for change was that the tenant had become prosperous enough to rent a larger farm or to buy one for himself. The statistics do show that the owners who farm average about 2 per cent. better yield than the tenants, but that is largely due to conditions over which the tenants have no control, for with most of the farms rented on half-shares the landlord and not the tenant is responsible for the wasteful system of farming. There are many poor tenant farmers, of course, but there are also many men to whom tenantry is the only avenue to ownership.

Such facts as these are particularly useful at a time when there is so much enthusiasm to improve country conditions, because they will help to keep enthusiasm within bounds and help to keep it directed toward possible achievement.

PUBLIC UTILITIES AND THE PUBLIC

ALL kinds of enterprises are grouped together in the public mind under the general title of business, but that term does not include the railroads. Their function is important enough to earn them separate consideration. Another kind of enterprise is achieving the same distinction. It is the so-called public utilities — particularly the sale of electricity for lighting, heating, and power.

In the last few years the electric companies have spread a network of wires all over the country so that towns, villages, factories, and even farms are in touch with a constant and cheap source of light and power. Perhaps there are many users of this electric power who do not feel that it is particularly cheap, yet speaking broadly it is cheap power, cheaper or better than any other power available, or it would not be there.

In Illinois the Public Service Company serves a territory from Chicago to the Mississippi, with branches southward to Cairo and northward to Wisconsin. There is another great company in the Northwest, another in California, another in the Carolinas, and others all over the country. Electrical systems are being put together as the railroad systems were put together. These great systems, and the thousands of independent units scattered through the land, are becoming even more interwoven than the railroads with the prosperity and comfort of all our people. To stimulate the legitimate growth and properly to regulate the activity of the public utility companies is one of the greatest material and governmental tasks before the country.

If we have taken to heart the country's experience with our railroads, in which overstimulation and the encouragement of corruption and loose methods were followed by campaigns of vengeance and regulation, if all this trouble has taught us anything, as a country we ought to handle this new and quickly developing special industry better than we handled the railroads. The public, expressing itself through its various legislative bodies, the public service commissions, the people who have money to invest, and the men who manage the electrical companies need to bend every energy to keep our public utilities in a right relation to the public. It is a task of public education and wise business statesmanship as well as of vigilant regulation, and what success we have in doing it will save us trouble a hundredfold in the future.

PORK BARRELS AND PUBLIC CONFIDENCE

REPRESENTATIVE James A. Frear, of the Tenth District of Wisconsin, recently sent the following letter to the WORLD'S WORK:

I am sending to you, under separate cover, a copy of the *Congressional Record* containing my criticisms of the $43,000,000 river and harbor appropriation bill for 1914, which in fact is a $76,000,000 proposition.

It is vicious in character, in my judgment is nine tenths bad, and ought to be defeated. It has passed the House, may pass the Senate within the next two or three weeks, and I am writing you in hope that through publicity of its contents the President will veto it. I have no personal interest in the matter but the bill ought to be defeated. Publicity based upon the facts presented will bring this result about. You speak to many thousands. As a matter of public responsibility, will you do your share?

I shall be glad to aid you in any way that I can if called upon by you.

Very truly yours,
(Signed) JAMES A. FREAR.

P. S. Your article on the "Pork Barrel" three or four years ago attracted my attention to the subject.

This bill and all its immediate predecessors are "pork barrel" bills, which means that the appropriations are urged by members of Congress because they feel that the expenditure of the money in their districts will be popular and despite the fact that in many instances, perhaps most instances, there is no possibility that the traffic on the rivers which are improved will justify the expense of improving them. The bills are passed because they give "pork" to enough districts to get a majority at election time.

There are plenty of legitimate river and harbor expenditures, but they are not distributed in as many Congressional districts as are the illegitimate ones, and with the present system of river and harbor legislation the illegitimate projects get much of the money which ought to be spent for useful improvements or not spent at all.

It is a good sign that there is an opposition to "pork barrel" methods growing up in Congress, for if Congress could stop passing such measures (either with or without the hope of having the President veto them), it would not only save the public treasury a tremendous amount of money but it would do the far more important act of removing one of the most corrupting influences in our national politics, and it would give the public an opportunity to place in Congress the confidence which of late years has been chiefly given to the Executive.

A MILLION DOLLARS FOR ANIMALS

MR. ROCKEFELLER'S gift of $1,000,000 to the Institute that bears his name, for the study of animal diseases, apparently impresses many observers as something new in philanthropy. But the study of human and animal diseases has always gone hand in hand. The laboratory workers could not separate, if they would, these two fields of scientific medicine. Practically everything we know to-day about medicine is the result of observations on animals. Galen learned that the arteries contained blood and not "air," as the savants of his time believed, by opening the arteries of a dog. Harvey discovered the circulation of the blood by experiments on animals. Pasteur revolutionized medical science and established the microbic origin of contagious disease by investigating a plague among silkworms. The first bacillus to be definitely isolated and cultivated was that which caused a terrible plague, known as anthrax, among domestic animals, especially sheep. Dr. Noguchi's discovery of the parasite of rabies, in all probability, will benefit dogs even more than it will mankind. It is not unlikely that, as a consequence of his work, dogs may be vaccinated against this disease just as human beings are now vaccinated against smallpox and typhoid fever. It is perhaps not generally known in this country, though it is known in Europe, that it was the work of an American, Dr. Theobald Smith, of Harvard University, that laid the basis for our present knowledge of the transmission of disease by insect bites. He did this twenty years ago when he

showed that the common tick carried Texas fever in cattle. Moreover, his work indicated how this cruel and costly scourge might be eradicated.

The anti-vivisectionists forget that animal experimentation brings about discoveries that not only relieve the sufferings of human beings but of animals as well.

Though work in animal diseases is, therefore, not particularly new, probably no large single gift for this purpose like Mr. Rockefeller's has ever been made. As all historians of morals show, nothing indicates the advancement of civilization so much as an increased respect for the rights and feelings of animals. The ancients did not have it; many backward peoples do not have it to-day. There has certainly been no time in history, as Mr. Rockefeller's gift, among other things, testifies, when this new rule of human conduct was so influential as it is now.

FARM MORTGAGES AS INVESTMENTS

A WESTERN man wrote to the WORLD'S WORK a few months ago to ask for some information about the literature of investment. He wanted to know the titles of the best books on finance and business, especially those which presented in the most intelligible form the fundamental principles of judging the safety of corporation bonds and stocks.

He explained that he happened to be seeking information of that kind, not because he was altogether a novice in investment matters, but because, after fifteen years of satisfactory experience with one type of security, circumstances had arisen which made it seem desirable for him to adopt new methods. But before doing so, he wished to acquire at least a reasonable amount of ability to discriminate, and he was willing to devote to a study of the questions involved whatever time might be required for the purpose.

He went on to say that he had spent practically all his business life in that part of the country where men were prone to laugh at what they considered the provincialism of the typical Eastern investor, whom they pictured usually as shivering in his shoes whenever Western mortgages were mentioned. He had kept his money employed in that type of investment for more than a decade at an average yearly income of 6½ to 7 per cent., with security never less than three, and frequently as high as seven, to one — and without a shadow of a loss. He said he had seen the time when good farm mortgages in his locality could be had to yield 10 per cent.; that the time when there was no difficulty in finding mortgages of undebatable character at 8 per cent. was within easy recollection; and that it was not so very long ago that the supply of what was regarded as the ultra-conservative kind of farm mortgages, yielding 6 to 6½ per cent. was adequate for the local demand.

But more recently conditions had been changing rapidly. The prosperity of the community had not only served to decrease the supply of mortgages as a whole, but it had invited competition among the more resourceful "foreign" lenders, so that the local investor was being placed at an increasing disadvantage. On one occasion recently, he said, he had had a mortgage paid off and, finding nothing to his liking with which to replace it, he had more or less reluctantly made his first departure from his old custom by putting the money into local municipal bonds. However, he felt now that perhaps he should be prepared to choose other alternatives. Hence his praiseworthy thirst for first-hand knowledge about corporation securities.

In replying to the Western man's letter with the desired information about the books, and with some commendation of his determination not to set sail upon a new investment course without knowing how to recognize at least the more conspicuous beacon-lights of safety, a splendid opportunity was offered to assure him that, even though he might find some difficulty in

tempering his prejudice for mortgages, he would sooner or later discover that in broadening his investment experience he had acted upon a sound principle. It was suggested that he might continue his new course with less reluctance if he were to study with particular care the subject of diversification — the method of risk-splitting, which safeguards the millions of the banks and insurance companies, and which is just as easily applied by the individual investor of average resources.

It seemed pertinent to suggest, also, that there was no reason why he should become alienated entirely from his favorite form of investment, even though suitable local mortgages continued to be difficult to find. He was, in fact, advised to investigate thoroughly the opportunities offered by other communities for sound investment of that kind.

And that bit of advice is really the point of this story. The local mortgage, subject to the nice personal scrutiny of the investor of intelligent judgment in respect to both its physical and moral risk, will, of course, always command universal and wholehearted endorsement. But nowadays only the "old-fogeyish" critic will advise indiscriminately against all farm mortgages except those which may be found in the investor's own community.

There are probably a great many people in the "provincial" East who, as our Western friend has imagined, get the shivers when a mortgage on somebody's farm in the West is mentioned as a likely medium for the profitable employment of their surplus capital. The memory of the big collapse in farm mortgages in the early '90's, which brought distress upon many savings banks in New England, still lingers in the minds of the older generation of investors. But as the development of agriculture has been studied, and as the extent to which the farm, as an income-producing plant, has ceased to be operated on hit-or-miss theories has become more widely understood, the possibility of a recurrence of anything like the events of the '90's has seemed more and more remote.

The way in which those resourceful and scientific investors, the life insurance companies, have continued to reach out, year after year, for mortgage loans into practically every section where the industry of agriculture flourishes, and the impressive results of their experiences, have served slowly but surely to remove old prejudices from the minds of individual investors everywhere. Added to this, there has been a growing confidence in the modern methods of making loans, adopted by scores of responsible dealers and brokers throughout the country, who are careful to discriminate between the borrower who asks for all his land will stand and the borrower who makes his proposition on a business basis, asking only for a definite sum of money for which he has a definite use.

The modern investment banker realizes that, no matter how painstaking his examination and investigation of the securities he sells may be, he must retain his interest in his clients so long as they continue to hold the bonds or stocks behind which he puts his name. And so the mortgage dealer knows that he must go even further than determining that the security behind the loans he makes is adequate. It is his duty to exercise, throughout the entire life of the mortgages he sponsors, careful supervision of the various properties that they represent; to collect and remit to his clients payments of interest and principal as they fall due; and to attend to such important details as the renewal of insurance policies and the search of the records each year to see that the taxes are paid.

This is a kind of investment service, and it is commanding wide recognition among thoughtful, conservative investors. The reliable mortgage dealers are seeking now to standardize this service by means of coöperative effort, either through a national association of their own, or possibly through affiliation with the Investment Bankers' Association.

The principal criticism of the old-fashioned "straight" first mortgage on farm land as an investment was based upon its non-convertibility.

It seems quite possible that coöperation in this field of banking may result in a sufficient broadening of the market for these mortgages to take away much of the force of that criticism.

PRESIDENT HADLEY, OF YALE

AN EXTRAORDINARILY BRILLIANT MIND HOUSED IN A SLIGHT FRAME OF INTENSE NERVOUS ACTIVITY — HIS FAMOUS BOOKS ON RAILROADS AND ON LABOR CONDITIONS — AN INTELLECTUAL PRODIGY AROUND WHOM COLLEGE LEGENDS HAVE GROWN UP IN HIS PRIME

BY

BURTON J. HENDRICK

MR. ARTHUR TWINING HADLEY, the president of Yale University, once described, as the essential quality of a gentleman, a willingness to accept trusts — to devote such talents as one possesses to the public service. In becoming a director of the New York, New Haven & Hartford Railroad, Mr. Hadley has given a striking illustration of his favorite idea. Many Yale men at first objected to his new activity. The reputation of the University, they urged, was being used as a cloak to give respectability to a rather bedraggled corporation. In a larger-minded view, however, the resuscitation of a great and much abused property may be regarded as university extension work of a heroic order. In the last twenty years the American people have found large uses for their college heads. They have pressed them into service as ambassadors, peace commissioners, colonial administrators — one has even become the head of the Nation. Why should a college president not prove equally valuable as the mender of a broken down railroad?

This Arthur Twining Hadley who, as a member of the executive committee of the re-organized New Haven, is a vital force in its management, is one of the most remarkable and interesting figures in American educational life. The public knows him as our greatest academic authority on railroads, a political economist of international fame, a witty after-dinner speaker, an Oxford lecturer; to Yale men, however, he is above all cherished as a personality. Though only fifty-eight years old, and in his intellectual prime, he has already become, in Yale annals, almost a legendary figure. Anecdotes cluster about his name as numerously as they do about Dr. Johnson's.

I well remember the day when, as a brand new freshman, I caught my first glimpse of a smallish, wiry, rapidly moving figure on the college campus. It was shooting in and out of the college buildings with the speed of one of Mr. Hadley's own beloved express trains. The extraordinary fact was the nervous activity this figure disclosed in every movement. There was no part of it that was still. I was informed that this was the great Arthur Twining Hadley, the intellectual prodigy of New Haven, the man who, with Professor "Billy" Sumner, made Yale the leading centre in America for the study of political science.

Once started on the subject of Hadley, the well informed Yale man could never stop. His name always started going an inexhaustible stock of stories. How many represent veracious history, I do not know; their literal accuracy, after all, is not especially important; a man's personality and character are almost necessarily reflected in the kind of anecdotes that are associated with him. The mere fact that a man inspires stories in itself tells much.

And the Hadley stories did not begin with Mr. Hadley himself; his father, James Hadley, the great Yale Greek scholar — a man whose name, as the author of "Hadley's Greek Grammar," is anathema to many an American schoolboy — is a considerable source of supply. The elder Hadley, his dog Xenophon, and his cane are now part and parcel of Yale history and Yale mythology. When Arthur Hadley first came into the world, he did not,

according to the New Haven legend, emit the usual preliminary cry; he joyfully uttered a Greek word — *erchomai*, meaning "I have arrived." The elder Hadley, indignant that the precocious boy had made a mistake in the tense, caught him up, gave him a spanking, and corrected: "You should have said *'elthon.'*" This anecdote reflects the reputation for erudition which Mr. Hadley enjoyed. Though his intellectual passion, as a Yale professor, was railroad transportation, there was hardly a subject in the college catalogue that he could not teach. Few professors of mathematics, it was said, knew as much mathematics as Mr. Hadley; the teachers of Latin were frequently astounded at his aptness in quoting obscure passages in Latin poetry; at a moment's notice he could make students of history ashamed of their shortcomings. As a college boy he had taken a large majority of the academic prizes; one of the favorite pastimes of upper class men was to lift young Hadley up on a box and make him deliver an address on any topic they assigned — an ordeal that he always creditably passed through. All European languages he spoke easily; there were few, dead or living, that he could not read with understanding. His attainments, I was informed, were not all strictly scholastic. He had a keen intellectual enthusiasm for almost everything. He was the best whist and chess player in New Haven. He was apt at tennis, a celebrated pedestrian, and an Alpine climber. He was supposed to understand football strategy, at least on the intellectual side, better than Walter Camp; he was fond of discussing baseball, and had one fixed idea, which he would debate for hours, that it would be a better game if played with ten men instead of nine. He was greatly interested in military strategy, and in particular was an authority on the strategic side of Napoleon's campaigns. Incidentally he was a splendid judge of wines. And then came more stories illustrating Mr. Hadley's range of interests. At sea he found amusement in calculating the day's run; on certain occasions he had called the officers' attention to their own mistakes. Once, at the circus, he surprised the elephant-keeper by his encyclopedic information on elephants. On another occasion a Yale professor, about to sail for Europe, told Mr. Hadley that, for greater stability, he was going to take a slow boat with a bilge keel. For the next half hour Mr. Hadley held him entranced with a long dissertation on bilge keels; there was apparently no phase of the subject that he had not mastered.

And there was an unending supply of delightful stories illustrating Mr. Hadley's absence-of-mind. One of the best of these stories was the description of Mr. Hadley telling his Alpine experiences to a group of ladies. As he warmed up, the narrator lost all consciousness of his audience and surroundings; he was in the Alps once more, going up the Matterhorn. As he reached one point in his ascent, Mr. Hadley stepped upon a chair. As he scaled another difficult peak he jumped from the chair to a table. If some one had not called his attention to what he was doing, there is little doubt that, by the time Mr. Hadley's story had reached the summit, he would have been standing on the mantelpiece or the piano.

MR. HADLEY ON THE PLATFORM

It was not until I reached my junior year, however, and had Professor Hadley in economics, that I really learned what an extraordinary person he was. Nearly every member of the class, as I soon discovered, elected this course; Mr. Hadley enjoyed the same popularity at Yale that Woodrow Wilson did at Princeton. In his days as a professor Mr. Hadley's mannerisms were even more striking than they are now. Usually a class of two or three hundred men occupied every available seat in the largest lecture room of Osborn Hall. As the hour struck, the door on one side opened and a slight, wiry figure, shaking with nervous energy, rushed in and ascended the platform at the rate of two or three steps at a jump. He landed with such force that a shudder would go over the class for fear that he might slide off the other end of the platform. Indeed, in the lecture that followed, the enjoyment was somewhat marred by the prevailing apprehension that the professor might suffer bodily injury. The platform was high and

small, and Mr. Hadley threw himself about it in most reckless fashion. As he proceeded in his argument, he would gradually advance toward the edge. On this he sometimes balanced himself on his toes for minutes at a time — the students in front momentarily prepared to catch him when he toppled over. At the critical moment, however, he would again strike the centre of gravity, drop on his heels, and perform a new acrobatic feat. At one end stood a post; placing his hand on this, the lecturer, with outstretched arm, would use it as a pivot, while his body, at a distance, performed indescribable gyrations around it. On one occasion, when he was sitting at his desk, the story goes, apparently not knowing what else to do with his feet, he suddenly thrust them into a waste-paper basket; it was a tight fit, and he had the devil's own time trying to extricate them.

PUMP-HANDLE GESTURES

No moving picture machine could ever catch Mr. Hadley's gestures. His fists were always tightly clenched in pugilistic fashion. One arm — this was the famous Hadley pump-handle motion — was constantly pounding an imaginary object in front of the speaker; the other was shooting obliquely up in the air or describing revolutions about his head. Occasionally Mr. Hadley would address the young men looking at them; at other times he would turn sidewise; there were periods when he would lecture with his back actually turned flatly to the class, his hands meanwhile agitating his coat tails. Again, he would pick out an imaginary spot in the ceiling, and, with head turned upward, address all his remarks to it. A favorite undergraduate sport was to bet on the number of times Mr. Hadley would walk up and down the platform in the course of an hour's lecture. This unparalleled awkwardness struck some people as extreme nervous weakness; in reality it was nervous force. The man lived so absolutely in the mind that he had not the slightest consciousness of what his body was doing. His unceasing mental activity expressed itself in muscular action; it was as though the brain had not sufficient resources to express everything he was thinking — Mr. Hadley thought with his fingers, his legs, his arms, his feet, even with his clothes.

The inadequacy of the physical tenement, as an expression of mind, was also indicated in Mr. Hadley's speech. One tongue was not enough to say all the things that crowded in his brain. While the physical apparatus was discoursing certain ideas, Mr. Hadley's mind was shooting forward to others. As a result, the two forces occasionally became ludicrously confused, and the doctor would get most horribly involved in a long sentence. Once, after getting more than usually tangled up in an interminable paragraph, he stopped suddenly:

"I forgot what I was going to say," he said, laughing uproariously with his class. "I think I'll go back and begin all over again."

No descriptive prose could give an intelligible idea of Mr. Hadley's voice. Only a phonograph could do it justice, or at least a system of musical notation. It is sometimes a New England drawl, at others almost a singsong, at others it is deliberate, calm, and sure of itself; usually the same sentence contains all styles in rapid succession. These characteristics have made Mr. Hadley a favorite subject for imitators. Every college generation has its student who acquires great reputation in this rôle. Mr. Amos Wilder, until recently United States consul at Shanghai, has become immortal in Yale annals for his imitation of Professor Hadley conducting a German recitation. A more recent graduate is in constant demand at Yale dinners. No one enjoys these performances more than President Hadley himself. Indeed, he is keenly alive to the frequently amusing character of his own actions. A year or two ago the Yale Union, the college debating society, invited him to make an address. "I suppose the reason you asked me to speak before you," he began, "was that you wanted the best illustration you could get of how a man ought not to behave himself upon the platform." He also recalls with zest his one appearance, in his early days, as an amateur actor. "They didn't give me any words to speak," he says; "all I had to do was to walk across the stage, but it brought down the house."

Any description of Mr. Hadley's peculiarities, after all, does him an injustice. These things lie all upon the surface. One notices them only at first; after a time, they are entirely lost sight of. For there is a powerful contrast between his physical awkwardness and his intellectual dexterity.

MR. HADLEY'S INTELLECTUAL DEXTERITY

There are no gyrations in his mental processes; there is nothing hesitant or clumsy about his brain. The stupidest and laziest student soon found himself ignoring the professor's manner in his absorbing interest in what the man had to say. In a few days the whole class became as unconscious of these mannerisms as Mr. Hadley himself. He held attention by the directness and vigor of his presentation, his clear, splendid English, his brilliancy of illustration, and his wit. At times the room, except for the speaker's voice, was absolutely silent; at other times there were gales of laughter at some brilliant sally or pointed anecdote. For if Mr. Hadley excels in one thing more than another it is as a story teller. He apparently remembers everything he has ever heard, and has an enormous fund which he can call upon at a moment's notice. And the beauty of his stories is that they always illumine his subject; they are not lugged in merely for themselves, but because they emphasize the point at issue.

HIS HAPPY WIT

One day a visiting clergyman, who was to preach before the students, asked how long he was expected to talk. "Of course, we put no limit upon you," replied President Hadley, with his usual pump-handle gesture, "but we have a feeling here at Yale — that no souls — are saved — after the first twenty minutes." At another time he was addressing the graduate body on a new building programme which called for a large expenditure. In the midst of his eloquent appeal for financial support there came a terrific peal of thunder. "And like the old Greeks," concluded Mr. Hadley, as soon as the noise died away, "having heard the voice of Zeus in approval, we can say 'the thing is done.'" The way he asked his prospective father-in-law for permission to marry his daughter was also characteristic. At the time, this gentleman, Luzon B. Morris, occupied an anomalous political position. He had recently been elected governor of Connecticut, but his claim was disputed and the state was in a political turmoil. "Mr. Morris," was the way Mr. Hadley approached the subject of his call, "I hope that I — at least — may be permitted — to call you — governor." Another episode at the Yale bicentennial in 1901 illustrated the readiness of his intellectual resources. One of the distinguished guests was the representative of the University of Upsala in Sweden. This gentleman, when received by President Hadley and the corporation in the reception room of the Art School, delivered a long address in Latin. As soon as he had finished, President Hadley made a lengthy reply, also in Latin. He had prepared this Latin address himself with only an hour or two of warning!

"Well, well," said Chauncey M. Depew, — at least the story represents him as saying — "I never knew that President Hadley could talk Swedish!"

A NEW ENGLAND CONSERVATIVE

This Latin episode shows that President Hadley has many scholastic attainments of the old fashioned kind. Indeed, despite his cosmopolitan experience and far-reaching intellectual interests, the New England note is the dominant one in his character. In subject matter Mr. Hadley is a modern of the moderns; in attitude his mind is distinctly conservative. As the first president of Yale who was not a Congregational clergyman, Yale men acclaimed his installation as the heralding of a new era; but New England conservatism is mingled considerably in Mr. Hadley's progressivism. His father was a professor at Yale; his grandfather was a professor in a New York medical institution; one uncle was a professor of Hebrew at Union Theological Seminary, and another uncle was professor of chemistry at the Buffalo Medical College. Arthur T. Hadley himself was born under the elms; the Yale students celebrated the event by burning red fire before his father's house; his life as a child was spent almost literally

on the Yale campus. Perhaps it is not surprising that, under these circumstances, Mr. Hadley's mind reflects the New England ideal. He has passed beyond the dogmatic stage, but President Hadley is a deeply religious man; Yale University is as much a Christian institution under him as under Dwight and Porter. He is a member of the Congregational church, regularly goes to communion, says grace at his own table, and preaches fervent baccalaureate sermons. We could hardly imagine President Hadley, like President Eliot, making a god out of electricity or primal force.

And likewise, in his attitude toward economic problems, this same New England spirit comes out everywhere. In his makeup there is little standpattism; but the note is always the conservative one. Henry George found one of his hardest antagonists in the youthful Arthur Hadley. Among his earliest successes at Yale were the lectures which he delivered against the ideas of Henry George. On all occasions he has written and spoken against Socialism. Indeed, an old fashioned respect for property informs all his writings. In the American Constitution he admires chiefly the function performed by the judiciary. This is the influence, he says, which has acted as a balance against the dangers of an enfranchised populace, and made property secure — in fact, saved democracy in America from the failures that have disfigured it in other lands.

And it is characteristic that he proposed a genuinely Puritan treatment for those who abuse the trust of great fortunes. This proposed treatment was "unsparingly refusing to associate" with them. His remedy for social ills is not legislation, or the use of nostrums; it is the cultivation of a better public conscience. New Haven believes that, in the last election, Mr. Hadley voted for Mr. Taft. Incidentally Yale, of which Mr. Taft was a graduate, and Princeton, which was Mr. Wilson's college, were lined up in an interesting way in this election. Most Yale professors voted for Wilson and most Princeton professors voted for Taft!

In the department in which Mr. Hadley has won particular fame this same New England conservatism has controlled. As an authority on railroads President Hadley has held a unique position for thirty years. When he began the study of political economy, as a young man of twenty-three, the science meant largely foreign trade and banking. Mr. Hadley's mind, however, immediately turned to two branches that had hitherto had little scientific attention: railroads and labor conditions. His book, "Railroad Transportation: its History and its Laws," representing the first serious attempt to analyze practical railroad problems, created little less than a sensation. A year after its publication, it was commended in the House of Commons as the greatest discussion of the railroad problem ever made. Translations immediately appeared in all European languages; two were published in Russian, one of which was made at the order of the Czar for the benefit of the Czarevitch, the present Czar. Even so practical a railroad man as E. H. Harriman declared that he had acquired much of his knowledge of railroads from this book. This work touched upon all the railroad problems that have agitated the country ever since: reckless competition, long and short hauls, discrimination in rates against individuals and communities, pooling, regulation, and so on. The Granger movement, through which the Nation had just passed, furnished the young economist plenty of material.

HIS STAND AGAINST RATE REGULATION

From that day, whenever the railroad situation has become acute, Mr. Hadley has been appealed to for advice. Committees of Congress, Presidents, railroad men, newspapers, and magazines have constantly turned to him. In the Senate investigation of 1886, which resulted in the first Interstate Commerce Act, he was constantly at Senator Cullom's elbow. Senator Orville H. Platt's famous speech against the anti-pooling clause was practically Mr. Hadley's work; Senator Platt said so in the speech itself. There was a strong movement on foot to make Mr. Hadley a member of the first Interstate Commerce Commission; had political considerations not intervened, it would have succeeded. Since then Mr. Hadley has figured largely

as a national adviser. His latest work was as chairman of President Taft's commission on railroad securities.

Notwithstanding that Mr. Hadley, for a generation, has been our foremost academic authority on railroads, it can hardly be said that he has exercised any great influence in definitely formulating national railroad policy. The railroad policy of the American people, as it stands to-day, flies in the face of his recommendations. There is probably no fact so nearly settled, for example, as the control of railroad rates by governmental authority. President Hadley has never favored this. He opposed the plan in 1886, when certain reformers wished to make it part of the Interstate Commerce Act; he opposed it in 1906,when the Hepburn Act, conferring this power, was up for consideration. He used essentially the same arguments on both occasions: Similar attempts, he said, had failed in England; and he recalled Charles Francis Adams and the old Massachusetts commissions. Mr. Adams's work, he argued, demonstrated that a commission merely with powers for investigating and advising could accomplish far more than one that had power actually to determine prices. In a comparatively recent essay he said: "I believe that the Interstate Commerce Act did more to prevent wise railroad regulation than any other event in the history of the country." In 1906, when discussing the Hepburn bill, he said that "evil and not good will come from the Hepburn bill," and prophesied that in a few years it would be repealed. Perhaps Mr. Hadley was right; he probably sees in present conditions a good deal to justify his pessimism; this view, however, does not control American railroad policy. In this attitude, the old New England conservatism speaks again; a conservatism that characterizes the official atmosphere of Yale to-day as fully as an unbridled democratic feeling does that of the University of Wisconsin.

HIS WORK AS LABOR COMMISSIONER

In matters that more immediately appeal to his sympathies, however, Mr. Hadley is more "progressive." Perhaps the most delightful chapter in his life is that which covers the two years, from 1885 to 1887, when he served as Labor Commissioner of Connecticut. Those were pretty lively times. "Any one who thinks that the labor situation is acute now," says Mr. Hadley, "should go back to 1885, when the Knights of Labor were in their prime. They controlled things as no body ever has since. I remember that in those days there were only two lawyers in the Connecticut assembly — the speaker and the chairman of the judiciary committee. The reason was that the Knights of Labor hated lawyers and none could, therefore, be elected. They grouped together 'lawyers, loafers, and rum sellers' as persons to be discriminated against." Strikes and boycotts then were taking place every day, many of them exceedingly effective. This turmoil seemed hardly the place for a young college professor; indeed, there was much amusement at first at the appointment of Mr. Hadley. But he attacked his problem in an intensely human way. He became acquainted, first hand, with the labor leaders. "Many of them," he now recalls, "were very interesting and able men, and I learned a lot from them. The more men you know the better political economist you are." Wherever there was a labor disturbance Mr. Hadley was early on the scene. His really valuable work, however, was in investigating factory conditions. He had no clerks or expense accounts, and had to travel all over the state, going through the mills, talking with proprietors and operatives, noting abuses and suggesting remedies.

His two reports — documents that acquired almost as much fame in their field as his "Railroad Transportation" did among railroad men — have a distinctly modern ring. Those people who are engaged in campaigns for the improvement of factory conditions could almost use these volumes as text books to-day. Thirty years ago, long before the present "child labor" movement started, Mr. Hadley had sounded this note in Connecticut. Clearly the things which he saw in the mills of Connecticut stirred him deeply. "It means," he wrote, "that these children are growing up without the advantage of regular education. It means that there is danger of physical deterioration and little

chance of intellectual improvement. It means an addition to the ranks of unskilled labor at present at the expense of the higher development of those laborers in the future. It means that the community is more anxious to increase the quantity of its products than the quality of its citizens. It is better to have a state with a small number of strong men and women than a large number of weak ones." He made pleas for shorter hours, better sanitary conditions, and adequate protection against accidents — reforms that have since been generally adopted in factory legislation. At that time workingmen in Connecticut had two serious grievances. One was the prevailing system of paying wages monthly. Another was the practice known as "factorizing" — that is, levying on a workman's wages for debt. Mr. Hadley took the workman's side in both matters, and showed, in great detail, their practical evils. In both his contentions he won his point, as legislation was adopted that did away with these abuses.

THE NEW HAVEN AND THE GOLD SUPPLY

After all, however, Mr. Hadley's lasting enthusiasm is railroads. He is as keen upon the subject now as he was thirty years ago. And his experience is almost unique in that, after having acquired a great reputation as a theoretical student, he now has the opportunity to test out his ideas in practice. His explanation of the difficulties of the New Haven road strikes one at first as somewhat academic. "If we look for the final cause," he told me, "we shall find it in the increase in the world's gold supply." What he means, of course, is plain enough. Many economists, including evidently Mr. Hadley, explain the increase in prices, and the consequent higher cost of living, by the huge additions that have been made in fifteen years to the world's supply of gold. That is, the purchasing power of the dollar is much less than it was; and that is only another way of saying that prices are generally higher. Like all railroads, the New Haven has been hit hard by the increased wages, increased cost of supplies, and other similar items. On the other hand, the Interstate Commerce Commission has — at least up to the present writing — vetoed an increase in rates. These two sets of circumstances, in Mr. Hadley's view, largely explain the New Haven's troubles.

"Mr. Norris, of Nebraska," said President Hadley, "recently declared that $200,000,000 had been abstracted from New Haven values in the last few years. His statement was correct but he did not add, what was the truth, that this large value had been abstracted by the arbitrary acts of the United States Government. In practically compelling the road to raise wages, and refusing it the right to increase rates, it has caused a net loss of $9,000,000 a year. The governmental policy regarding the parcel post — in paying us inadequately for the service, and in the loss from express company receipts — nets us an annual loss of $1,000,000. There are other indirect losses amounting to another $1,000,000. So here we have a total loss of $11,000,000, which is 5½ per cent. on $200,000,000, which, you observe, is exactly the figure Mr. Norris named."

Not that Mr. Hadley thinks that the road has not made mistakes. In purchasing the Boston & Maine Railroad, Mr. Mellen obtained a "gold brick." Mr. Hadley criticises the purchase of the trolleys in Rhode Island and Massachusetts; not, however, on the ground which makes the act so obnoxious to Mr. Brandeis. That they possibly eliminated competition in certain sections, or tended to establish a railroad monopoly, does not disturb Mr. Hadley. His great work on "Railroad Transportation" gave much space to demonstrating the futility of railroad competition. Nor does the fact that the capitalization contained liberal quantities of what some people call "water" affect his judgment. Mr. Hadley thinks that much cant is talked on the subject of "watered stock" — that the whole thing is vastly misunderstood. No, he objects to the purchase of the trolleys in Rhode Island and Massachusetts simply because Mr. Mellen made a bad bargain. He paid more money than they were worth. The properties show no return on the money invested in them — rather the reverse. On the other hand, he approves the purchase of the trolleys in Connecticut, be-

cause they do show such a return. Mr. Hadley, with President Elliott, conducted the negotiations with Attorney-General McReynolds that ended in the settlement of the Government's suit. It is hardly likely that the result was especially palatable to him. The settlement forces the sale of practically all the outside properties which Mr. Mellen had added to the road. Mr. McReynolds even proposed that they go back and resuscitate the old New England Railroad — a rival line the New Haven absorbed twenty years ago — as an independent property. Mr. Hadley and Mr. Elliott, however, obtained this much mercy — the New Haven and the New England will not separate.

AS A COLLEGE PRESIDENT

It seemed almost a pity to take Mr. Hadley from the work of a teacher and make of him a mere university president. The man is essentially a thinker, not an administrator; an intensely virile and stimulating human being, not a cold-blooded matter-of-fact executive. It may safely be said that he has no taste for the ordinary dry routine of official college work. He has none of the brutal fanaticism that sometimes seems essential in the reformer; the very openness of his mind, and its tendency to play with all phases of a question, in themselves interfere with any hard and fast policy. Indeed, in any narrow sense, Mr. Hadley does not seem to have had any policy at all. He is not a university head like President Eliot and President Wilson; he does not map out a course and ruthlessly pursue it, either destroying all his enemies or destroying himself. In its relations with its president at least, Yale is a very democratic institution. Unlike President Wilson, he has no panacea for the social ills of undergraduate life; he leaves it to the students to work out their own salvation. Unlike some other distinguished college heads, he makes no attempt to tyrannize over the faculties.

In certain very definite ways, however, Mr. Hadley is a powerful force at the University. As an individual he stands preeminently for two things. In the first place he is a man of great intellectual distinction. In pure cultivation, there is probably no university head in the United States to be compared with him. In the second, he is a man of the highest moral ideals. And, under him, life at Yale has improved in both these directions. President Hadley, tolerant as he is in some things, will not tolerate slipshod work in his professors or his students. Under him Yale is primarily a place for education in the most liberal sense. He will admit none except first rate men to the faculty; he will leave a professorship vacant for years rather than fill the chair with an inadequate man. As a result the scholarly tone of the place is higher now than ever. One of the most-sought-for undergraduate honors at Yale to-day is an election to the Elizabethan Club — an organization of small membership to which literary and intellectual prominence is the only avenue. The Yale Medical School, which fifteen years ago was a negligible institution, is now rated by the American Medical Association as one of the two in New England worthy of survival — the other, of course, being Harvard. The Yale Law School, in President Hadley's time, has become one of the best in the country. Other evidences of the new intellectual spirit are the *Yale Review*, a periodical that has been referred to by Henri Bergson as "the best magazine published in America," and the Yale Press, a publishing house sponsored by the University. That the moral tone of the undergraduates constantly improves is also the general testimony. There is much less drinking, much less riotous living — and Yale always compared favorably with other colleges in this respect — than there was fifteen or twenty years ago.

In certain externals the place does not seem so plain-living as it was; material prosperity is manifest everywhere — under Mr. Hadley the endowment has increased from $7,000,000 to $17,000,000; there are many beautiful new buildings, there are more ornate college rooms, there are automobiles and other luxuries; many signs of that increase of wealth against which Mr. Hadley warned the University in his inaugural address. Already there are signs of rebellion; the same social unrest that prevails in the "outside world" is now agitating the undergraduate body.

ARTHUR WOODS

AND THE POLICE COMMISSIONERSHIP OF NEW YORK — A NATIONAL JOB

THE police commissionership of New York is a national job. The way it is conducted determines in a large measure the success or failure of America's largest experiment in city government, for the rock on which good government splits in New York, and other large cities, is usually the police department.

As the country watches Mayor Mitchel with one eye it should watch Arthur Woods with the other.

The new Police Commissioner is a new kind of police commissioner. Unlike three of his predecessors, Mr. Bingham, Mr. McKay, and Mr. Waldo — the first two West Pointers and the third a veteran of the Spanish War — he has had no military experience to fit him for a command which in some respects is military in character. Unlike others of his predecessors he has not come to the control of the Police Department through channels of public life. Arthur Woods is neither a military man nor a politician. But in a big new sense he is a born police commissioner.

On the day in April when Mr. Woods took over the office from Acting-Commissioner McKay, he closed up his desk in the old City Hall and, as secretary to the Mayor, said good-bye to his chief.

"I'm going up to Headquarters now to tackle the new job," said he, holding out his hand.

The Mayor stood up and gripped it hard. "You big fool," he said slowly. "Good luck to you!"

And when, a few hours later, the ceremony of swearing in had been gone through and the commissioner's room was cleared of the reporters and photographers who had "covered" the event for the afternoon editions, and the new chief was left alone to face his task, he found a card with a big bowl of red roses on his desk. On the card was written, "With the enduring loyalty of the Harvard Club." That was the day of the funeral of Detective Joseph Guarnieri, one of the ablest officers in the force, who had been shot in the brave performance of his duty. Mr. Woods kept the card and sent the roses to Guarnieri's house. The incidents attending the attempted shooting of the Mayor on April 17th are still fresh in people's minds. It was Mr. Woods who first marked the would-be murderer and, immediately jumping at him, prevented the second shot which might have been fatal.

Better than a lot of description, these incidents define the man. He is the kind of "fool" who turns from the easy life his generous private income assures him, and from the congenial lighter tasks of his former office as secretary to the Mayor, to four years of trouble. He is not in this job for anything he can get out of it but for what he can put into it. The loyalty of his friends in the Harvard Club is characteristic of all his friends, and most of his acquaintances are his friends. The boys who were at Groton School during the eleven years of Mr. Woods's mastership remember him as the strongest personality among the younger masters, and several of them owe to him the influences which shaped their school days and started them right on the long road through college into a world of work and service. Joseph Guarnieri was his friend. If he has faults they are the generous faults of enthusiasm and eagerness. A safer type, perhaps, is the kind of silent man who sits back in the shadows and bosses the undertaking, whatever it may be. No shadows for Mr. Woods. He wants to touch his territory first hand, believes in keeping headquarters close to the firing line. His physical alertness, which probably saved the Mayor's life, is characteristic of a decision equally quick in other respects.

If you were to ask the chief of the Police Department he would tell you that he would rather have his present job than any other he can think of. For he has really always been a police commissioner in the

sense in which he now approaches what he considers the possibilities of his new office in the government of New York City. In temperament he is objective, solicitous, a regulator by instinct. In character he is a charitable disciplinarian of the later-day type who put not their faith so much in rules and ordinances as in positive principles. And nearly all his experience has been of a kind to fit him as the physician of other people's affairs, to make him his brother's keeper, which in the last analysis and on an enormous scale is just what a police commissioner ought to be. At Groton they used to call him "Doc" Woods, not because he knew any materia medica, but because he was always trying to help people out of their difficulties.

Mr. Woods's people have always been New Englanders of the home-staying type: doctors, teachers, preachers, one of them the founder of Andover Theological Seminary. He and an older brother, who has lived many years in India, are the only wanderers of them all. In the public schools of Boston he got a sound elementary education and was graduated from Harvard College in 1892.

From school teaching to politics in New York City seems a long step, but the same attitude of mind which had made Mr. Woods a regulating force at Groton took him straight into the reform side of municipal affairs when, after a trip around the world with the Taft party in 1905, he found that he had outgrown his academic life. He prevailed with men as he had with boys. He got to know the city as a reporter on the *Evening Sun* and, as secretary of the Citizens' Committee, made a special study of the police, his findings contributing to a bill now in effect as law. General Bingham created the office of fourth deputy police commissioner and put Mr. Woods in charge of it; and in this capacity, from 1907 to 1909, he entirely reorganized the detective branch of the department and through its increased efficiency was able among other things practically to stamp out the Black Hand which had periodically terrorized the East Side. General Bingham's forced resignation took Mr. Woods's with it, for the deputy was loyal to his commissioner; and the chief of the detective force went out to Mexico as director-manager of the Colima Lumber Company.

The two years in Mexico brought a particularly interesting experience, for in addition to his commercial development projects he became associated with Francisco Madero, whom he advised in several matters of policy and regulation and, as is not generally known, drew up a series of recommendations for the Mexican president which, had they been adopted at once, might have continued him in power.

When the present revolution began Mr. Woods had already been obliged to leave Mexico, because of his father's death, to take charge of the affairs of Joseph W. Woods & Sons. Of this manufacturing concern he is still the treasurer.

But no amount of commercial prospects could keep him away from New York when the last reform campaign began. As secretary and adviser to John Purroy Mitchel he took a leading part in landing the Fusion candidate in the mayor's office, and the new chief executive's dependence upon his services was at once recognized by his appointment as secretary to the mayor, a position which he relinquished only to take up the responsibility which he now holds.

In assuming these responsibilities the new commissioner has a far larger conception of the field before him than the office has hitherto defined. One of the daily papers hit at the idea in a heading which read, "Woods To Bring Police Department into the Uplift." That is just the wrong way of expressing the truth. Mr. Woods is trying in a practical way to bring uplift into the police department. He is not going to be content merely with the detection and punishment of crime. He is thoroughly in step with the times in his endeavor to head off the tendencies to crime or to block the initial stages of criminal action before its actual commission; in his determination to link up his department with all the other organized forces in the city which are working for better health and sanitation, social betterment, and education in its broadest applications. It is his firm belief that improved conditions in public morals cannot be achieved by repression without the influence of a genuine civic coöperation.

THE NEW ILLUMINATION

SAVING A NATION'S EYESIGHT BY METHODS OF LIGHTING THAT DIFFUSE THE LIGHT AND ELIMINATE ITS GLARE — THEIR EFFECTS ON THE COMFORT OF THE HOME AND ON THE EFFICIENCY OF INDUSTRY

BY

CLARA BROWN LYMAN

NINETY per cent. of the blindness and defective eyesight in this country could have been prevented, and a shockingly large proportion of it has resulted from wrong lighting conditions. These are conclusions that years of study have forced upon the New York committees for the prevention of blindness and defective vision and similar organizations that are now active in most of the states.

Such statistics and the propaganda of the Illuminating Engineering Society, which had been hammering away at the public for years, finally aroused the attention of a considerable part of the commercial world about six years ago, because it had at last been proved to them that bad lighting conditions in factories and shops meant less efficiency among their workers, with subsequent loss of money through decreased output. They put experts to work on the problem which to-day is approaching a satisfactory solution. So it is to economic necessity that we owe the wonderful lighting reforms that have been brought about primarily for the benefit of the industries and that now are being rapidly applied to the lighting of public buildings and homes.

The misfortune of yesterday was not enough light; the mistake of to-day is too much light, light that is badly placed and wrongly used.

As soon as it was possible to turn night into day by the use of gas and electricity, the factories did so. They were not sparing with it, either, and generously put an individual light over each machine so that the worker might have all the light necessary to see by. It is largely this individual machine lighting, however, that has worked such havoc with the eyesight of the all-night toilers, especially as, at the beginning, the light sources were not even shaded. Flickering, open-flame gas burners throw deceptive shadows and the eye muscles have continually to contract and expand in order to meet the strain thus put upon them. Unshaded electric lamps, though steadier, are like miniature suns shining directly into the eyes. More than that, they were, at first, hung by cords that swung to and fro at the merest touch and caused added irritation.

To get away from the necessity for this individual machine lighting, to invent a system of such diffusive power as to admit of its being installed overhead, to find a light that would give a steady, even illumination and approach daylight in value as nearly as possible, has been the goal of the lighting scientists of to-day. The various steps in the progress are full of interest. First came the mercury vapor tube light in the form of long glass tubes containing mercury vapor which, when volatilized, glows with a greenish light. These tubes are installed around the walls of a room, just below the ceiling or across the ceiling itself, and in every part of a room so illuminated, no matter how large it is, every worker can see equally well, so searching and powerful is their diffusion. There is no glare from this kind of light, and there are no deceptive shadows. As its principal characteristic is that it makes black stand out against white as though in relief, it was particularly effective in the printing trades and in post offices, where it is now used to a considerable extent. Among the first installations were the old New York post office on City Hall Park and the pressrooms of one of the big New York dailies nearby, where the weird green glow is still, nightly, a source of wonder to the

passing throngs. When this light was first installed there, letters of protest poured in from all quarters from kindly disposed but uninformed people who were sure that the workers would all be blind within a month.

Far from being hard on the eyes, however, the mercury vapor tube light is actually restful to them, because there is no strain in order to see. But, because it contains no red rays, it is impossible to distinguish colors under it and so, for trades which involved working with color, a new form of tube light was next invented, known as the nitrogen vapor tube, that gave a light that was pinkish in tone. But the present-day lighting genius who invented it was not satisfied until he produced the carbon-dioxide tube light, whose bluish-white radiance is practically daylight so far as colors are concerned. Within the last year, a new form of "daylight lamp," as it is called, has been put upon the market in the shape of individual fixtures which can be installed in stores and shops where it is necessary to use artificial daylight a greater part of the day. These fixtures contain either a special upright gas mantle or a tungsten lamp, beneath which is a "daylight screen" of colored glass which has the properties of selecting and screening out of artificial light all the colors which tend to destroy its daylight properties.

And now that we have arrived at what is practically daylight in artificial lighting, it is difficult to convince the public that it will do what is claimed for it and that it is not hard on the eyes. One of the lighting companies of New York City did a clever thing to convince its patrons of the value of the new invention. They installed what they called a daylight-making machine in one of their display windows. This was simply one of the gas daylight producers, installed in a cabinet through which was run a band of ribbon made up of several colors. One end of the ribbon was left outside the cabinet next the window where it had actual daylight, and the crowds who stopped to view the phenomenon could see that the ribbon appeared exactly the same on both sides of the cabinet; yet they were skeptical. "You can't tell me," I overheard one woman say. "That's just two different pieces of ribbon." And so many people said this that the company finally put a demonstrator in the window and had him remove the ribbon from the box periodically, to show the crowd that it was really what they claimed.

Other systems of lighting were meanwhile worked out that might be applicable both to commercial and domestic use. The gas and electric light companies put their experts to work on improvements, and the inverted mantle and the tungsten lamp soon replaced the old-time open-flame gas jet and the inefficient incandescent lamp. There was too much waste of power with these old lights and not enough result. The newest mantles and lamps produce a light that is whiter, more brilliant, and far more effective than the old yellowish tone that the illuminants formerly had. They give colors practically their normal values; and they cut the cost of lighting, while giving better quality. But, wonderful as they are, they are worse than useless — they are actually harmful — unless they are properly shaded and rightly placed in relation to the eyes.

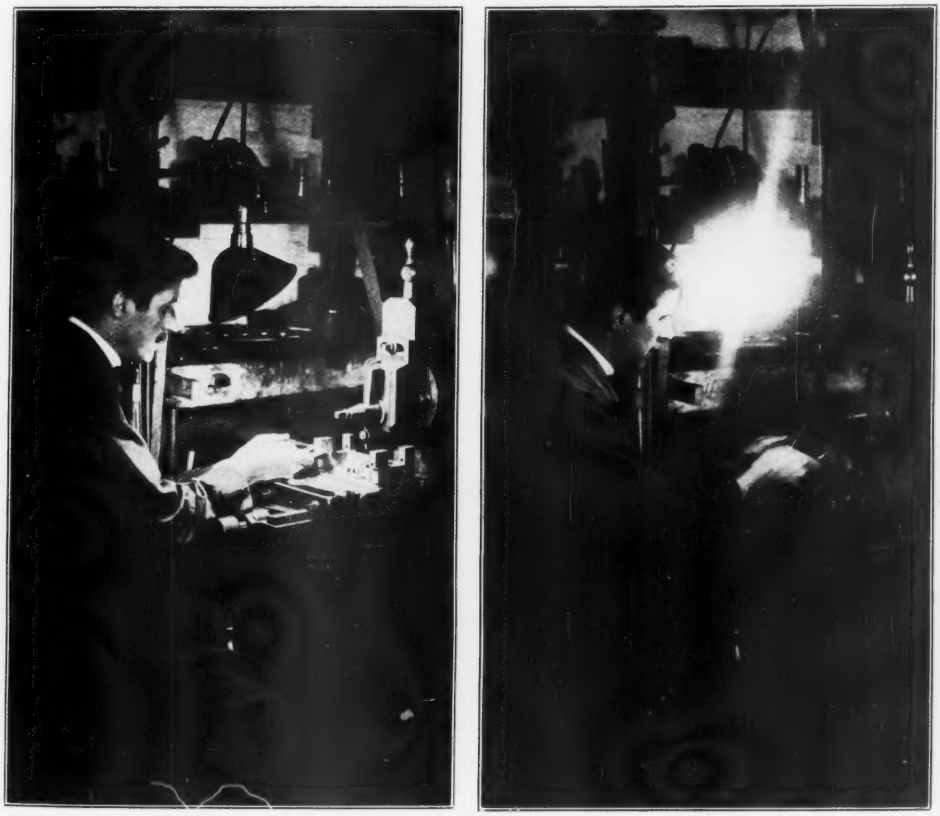
With these facts in mind, three new systems of illumination have been evolved for both gas and electricity: the "concealed," the "indirect," and the "semi-indirect," each based upon the principle of light diffusion from a white ceiling. The old system, with which we are all familiar, is known as the "direct," because the light is shed directly downward.

The object of the newer methods is to keep the illuminating source away from the range of vision and so to diffuse the light that every part of a room will be equally well lighted. Meanwhile, the "direct" system has been improved by scientific placement of the fixtures, and by the use of specially designed glassware for shades and globes and of frosted tipped electric lamps and gas mantle cups as a further protection for the eyes, for the whole modern thought in lighting is to avoid glare and give the eyes a chance to do their work under normal conditions. Each of these modern methods can be applied to

the lighting of the home as well as to commercial illumination.

The "concealed" system takes its name from the fact that the lights are installed behind cornices, around the tops of pillars, back of glass skylights or domes — in all cases, as near as possible to the ceiling. Powerful incandescent lamps are set in special reflectors which throw the light upon the ceiling, whence it is evenly diffused throughout the room. The charm of this kind of illumination is that the source of the light is wholly invisible. It is exactly as though the room were flooded with daylight. No fixtures are necessary with this method, and it is wonderfully effective in public buildings, churches, theatres, art galleries, schools, anywhere in fact, where a large area is to be illuminated in such a way that people can see in any part of it without the necessity for using as great a number of fixtures as would otherwise be necessary.

The "indirect" system was invented about five years ago by an illuminating engineer in Chicago who, while experimenting to find something that would diffuse light and yet keep it away from the eyes, tried turning the shades on his fixtures upside down. The effect led him to see the possibilities of using the ceiling as a diffuser of light and resulted in his working out the indirect method. In this, fixtures of a cup or bowl-like shape are used, hung from the ceiling by chains or rods. The container is entirely opaque, either of metal or some metallized substance that prevents any light from coming through, and forces it against the ceiling by means of powerful reflectors with which



A RIGHT WAY AND A WRONG WAY TO USE LIGHT

IN THE PICTURE AT THE LEFT, THE WORKMAN'S EYES ARE SHADED AND ALL THE LIGHT IS CONCENTRATED ON HIS WORK; IN THE PICTURE AT THE RIGHT, THE WORKMAN IS BLINDED BY THE GLARE WHICH NOT ONLY IRRITATES HIS EYES BUT MAKES IT HARD FOR HIM TO SEE WHAT HE IS DOING

THE "DIRECT" SYSTEM OF LIGHTING AT ITS WORST

UNSHADED LAMPS SUSPENDED AT THE LEVEL OF THE EYES, WHICH THUS CANNOT ESCAPE THE GLARE, AND HANGING BY FLEXIBLE CORDS SO THAT THE SLIGHTEST TOUCH PRODUCES FURTHER IRRITATION TO THE EYES BY MAKING THE LIGHTS DANCE BEFORE THEM

DIRECT LIGHTING IN A DEPARTMENT STORE

AN IMPROVEMENT ON THE CONDITIONS THAT ARE SHOWN IN THE PICTURE ABOVE, BUT FAR FROM IDEAL BECAUSE THE GLARE REMAINS AND BECAUSE HEAVY SHADOWS ARE PRODUCED BY THE DIRECT RAYS OF LIGHT

the container is lined. In some types, the container has a highly glazed enamel lining which acts as a reflector. By this method, the light is diffused evenly over an entire room, lighting up the corners and enabling every one in the room to see equally well. The effect of this kind of lighting is interesting to watch. There are no puckered brows, no strained look on the faces of people who are reading or working in a room so illuminated. The eyes and nerves have involuntarily relaxed and a feeling of well-being and repose that must be experienced to be appreciated takes the place of the high-strung, overwrought, nervous state induced by glaring, unshaded "direct" lights.

The "semi-indirect" system, a more recent development, employs translucent glass bowls in place of the opaque material, though the principle is practically the same. Here, some of the light filters through, shedding an agreeable glow upon the room; some of it is reflected upward against the ceiling, as in the indirect system, by means of the specially designed

THE SOFT LIGHT THAT IS DIFFUSED BY THE "INDIRECT" METHOD

WHICH PRODUCES A RESTFUL GLOW OF UNIFORM INTENSITY IN ALL PARTS OF THE ROOM, EQUALLY FREE FROM GLARE AND FROM DEEP SHADOWS

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A BADLY LIGHTED LIVING ROOM

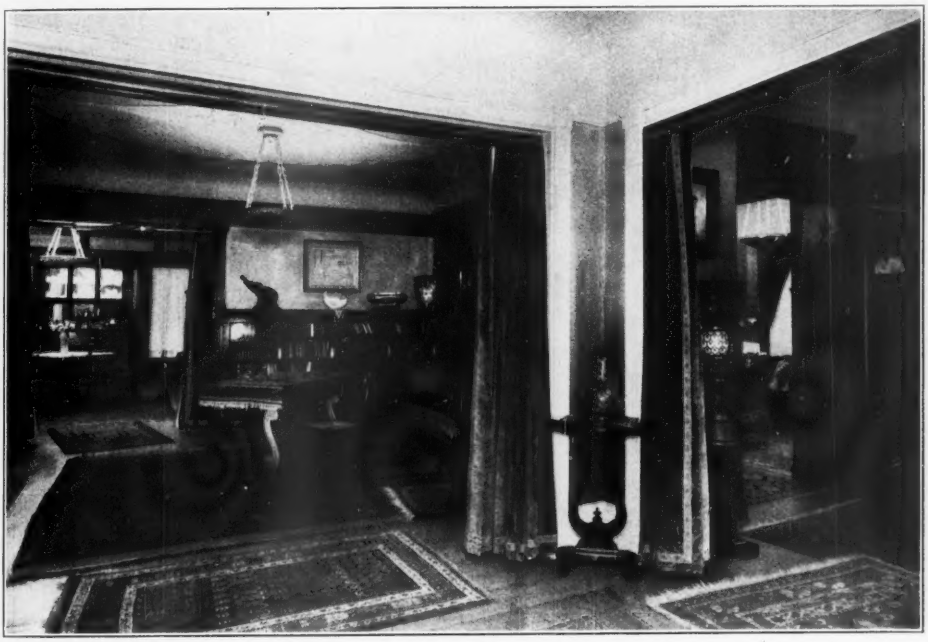
IN WHICH THE EYES ARE HURT BY THE DIRECT RAYS OF LIGHT FROM THE CEILING AND FROM THE TABLE LAMP

reflecting inner surface of the glassware. Mother-of-pearl, onyx, marble, and alabaster are also used for "semi-indirect" lighting. No portable lamps or wall lights need

SEMI-INDIRECT LIGHTING IN A BEDROOM

A RESTFUL CONTRAST TO THE GLARE IN THE LIVING ROOM THAT IS SHOWN IN THE PICTURE ABOVE

be used with either of these methods, for one can see to read or work in any part of a room so illuminated; yet a great many people have the illusion that they cannot see by these indirect lights and feel the necessity of a table lamp set right near them, just as the old fashioned folk could not get used to radiators for heat; they wanted a good old fireplace to get warm by, although they knew perfectly well that they roasted in front of it and froze if they left it for a moment to go to any other part of the room.



IDEAL LIGHTING IN THE HOME

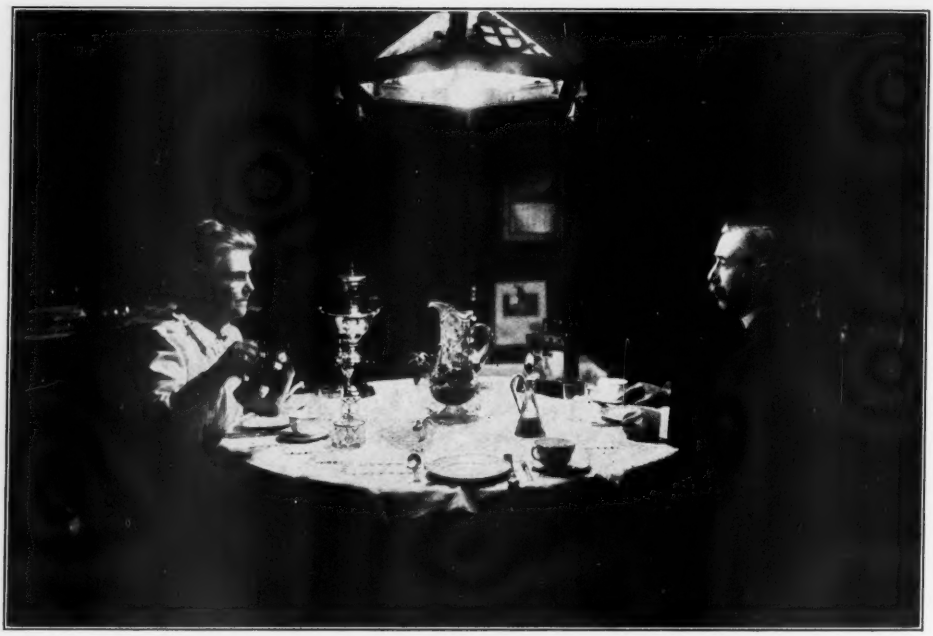
BY THE INDIRECT METHOD, WHICH ELIMINATES ALL GLARE FROM DIRECT RAYS BUT WHICH NEVERTHELESS SUPPLIES ADEQUATE LIGHT FOR READING IN ALL PARTS OF THE ROOMS

Any kind of artificial lighting that produces glare is wrong in principle and its effect upon the eyes will be felt as inevitably as though the sun were hung in the room just at the line of vision. A fixture over a polished table or in front of a mirror is as hard on the eyes as sunlight on white sand; indeed, it has much the same effect. The lights in a central chandelier of the direct type, hung low, burn the eyes and heat the brain; yet people will wonder what gives them headaches in a dazzlingly lighted room. It is a strain to distinguish people or objects in a room lighted in this way, yet you will see people shading their eyes with their hands while trying to read or work, and attributing the eye strain they feel to everything else than their "artistic fixtures." More often than not, such fixtures, though perhaps having shades for the light sources, will have the lamps or gas mantles protruding above or below the edge of the shade, where the eye cannot possibly escape them. In a mistaken effort to have a room brightly lighted, shades and globes of clear glass are often used, again subjecting the eyes and nerves to torture, and wasting lighting power. The lesson must be learned in the home as well as in the factory that the eye can see less with a brilliant, unshaded light source than it can with less light well protected.

Unless the indirect systems are used, great care must be taken in regard to the position of lighting fixtures in relation to the eyes. Overhead fixtures must be hung high above the line of vision, and the sources of light must be well shaded. Wall brackets are so many bright points

A RESTFUL CONTRAST TO THE GLARE IN THE LIVING ROOM THAT IS SHOWN IN THE PICTURE ABOVE

of light which the eye cannot escape. Unless scientifically installed, the glass domes over dining or library tables are apt to be sources of eye strain, for they throw a blinding glare down upon a white or polished surface which is reflected up into the eyes with all the effect of snow blindness in miniature. When they are fringed, as they often are, the effect is even worse, for then strings of light and shadow are thrown across the field of vision. The same is true of portable or table lamps. Any practical use of a lamp that is concealed by a fringed shade is like trying to read through a wire screen. And to use leaded colored glass shades for reading or working would have about the same effect upon the eyes as reading through a stained-glass window by twilight.



A FIXTURE THAT DOUBLES THE STRAIN ON THE EYES

BECAUSE THE STRONG GLARE FROM ABOVE IS REFLECTED FROM THE WHITE TABLE CLOTH AND DISHES, SO THAT THE EYES CANNOT ESCAPE THE POWERFUL DIRECT RAYS OF LIGHT

Even in the business world, people are just as careless about lighting conditions as they are in their homes. In many an office, men sit at glass-topped desks, a shaded lamp, perhaps, directly in front of them, and then wonder why their eyes tire so soon, when all the time the reflection of the light shining down underneath its shade upon the polished surface of the glass is dazzling the eyes and tiring the brain. Since the new powerful tungsten lamps have been put upon the market, it has been a common sight to see them hung shamelessly unshaded directly over a desk or used in a portable lamp placed in front of the eyes. Even the "seats of the mighty," it seems, are not blameless in this regard. Only recently, on the occasion of a visit to the office of the Mayor of New York (who, by the way, is said to have offered a reward to any one who can cure his headaches), the writer sat in his anteroom, talking with his secretary on this very subject of lighting as applied to certain civic questions. Mr. Cruger had expressed himself as especially interested, inasmuch as he had suffered so much from his eyes and wondered if it could be that the lighting of the offices in the City Hall had anything to do with it. I glanced up. We were sitting directly under a cluster of bare tungsten lamps, set against a powerful reflector!

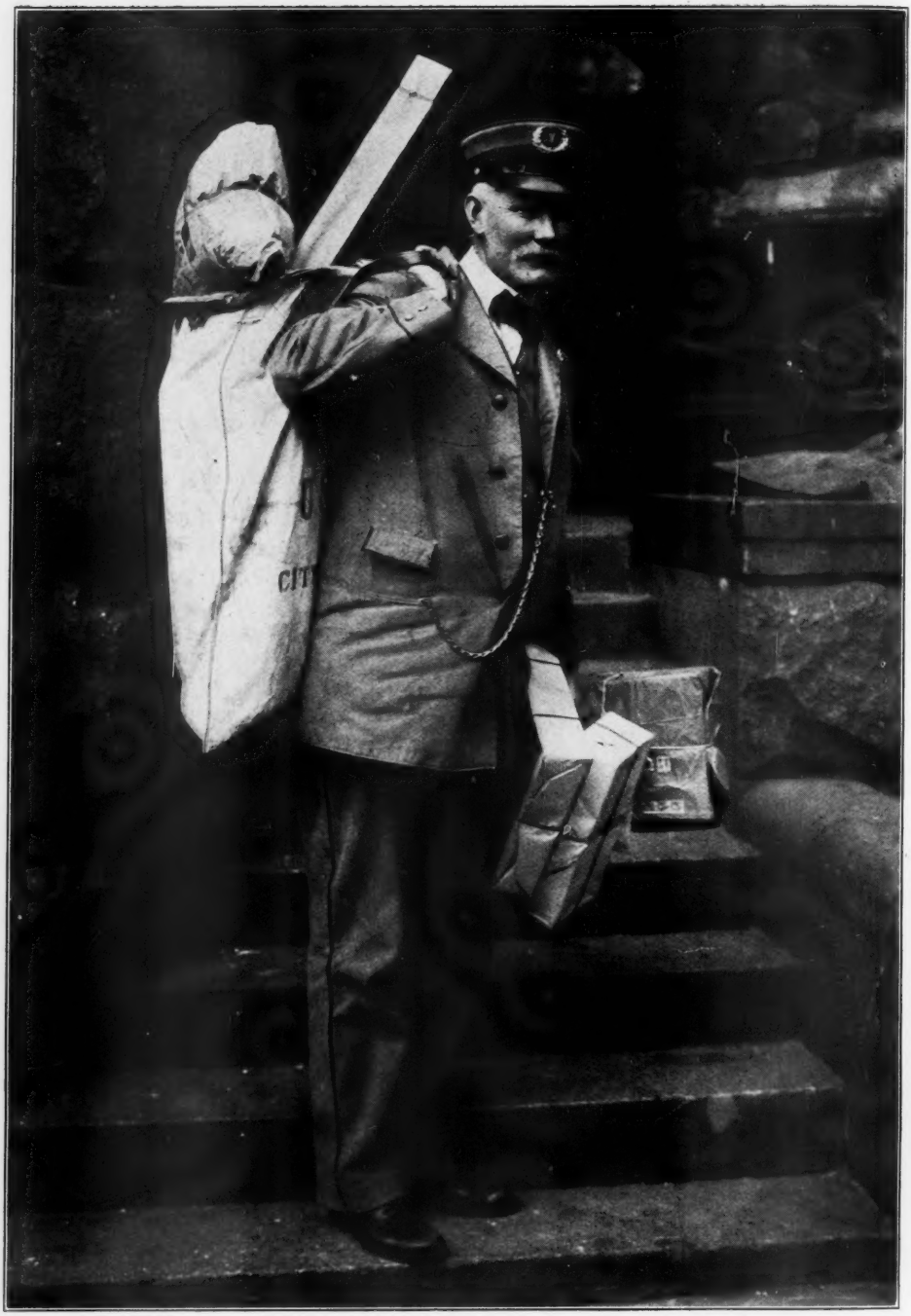
A LIGHT THAT MAKES HEADACHES INEVITABLE

BECAUSE THE DIRECT RAYS CAUSE EYE STRAIN AND THE HEAT FROM THE LAMP BRINGS THE BLOOD TO THE HEAD

The new illumination is revolutionizing the methods of factories and department stores. It is increasing efficiency there, and in offices as well. In the homes, it is bringing about a new era of comfort. And it is working powerfully to save the sight of men and women and children wherever artificial light is used.

AN EFFICIENTLY LIGHTED OFFICE

IN WHICH THE LIGHT IS STRONG ENOUGH FOR ALL PRACTICAL PURPOSES BUT SO SOFT THAT THERE IS NO STRAIN ON THE OPTIC NERVES



THE SPIRIT OF THE PARCEL POST

THE PARCEL POST HAS ADDED SOMEWHAT TO THE LABORS OF MAIL CARRIERS IN THE CITIES, ESPECIALLY DURING THE HOLIDAY SEASON

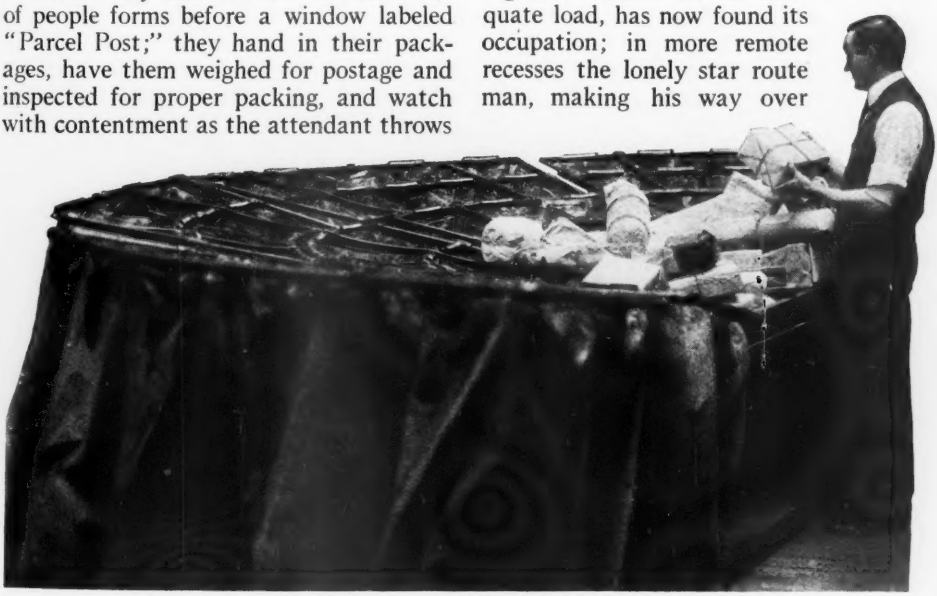
UNCLE SAM, EXPRESSMAN

THE PARCEL POST AFTER EIGHTEEN MONTHS OF TRIAL — HOW IT HAS ALTERED THE RELATIONS OF THE CITIES TO THE COUNTRY AND WHAT IT HAS DONE FOR PEOPLE THAT LIVE IN MORE REMOTE DISTRICTS — ITS EFFECT ON THE RAILROADS AND THE EXPRESS COMPANIES

BY

JAMES MIDDLETON

WELL, the thing has finally been done: after more than thirty years of unceasing agitation, ordinary articles of merchandise and domestic use can now be deposited in the United States mail. An effective parcel post is no longer merely a favorite subject for magazine discussion and high school debates; it is a practical, accomplished fact. In every American city and town, a constant line of people forms before a window labeled "Parcel Post;" they hand in their packages, have them weighed for postage and inspected for proper packing, and watch with contentment as the attendant throws them into a large receptacle, which, when full — and it fills with amazing speed — is wheeled off to the mailing department. Every city letter carrier shows evidences, in a somewhat more bulkily filled shoulder bag, of the new dispensation; and brightly painted "screen wagons" and automobiles, packed to capacity with miscellaneous bundles, are dashing through every city street. On every country road the wagon of the rural carrier, for many years yawning half vacant for an adequate load, has now found its occupation; in more remote recesses the lonely star route man, making his way over



MORE CLERKS, LESS "OVERHEAD EXPENSE"

THE INCREASED BUSINESS, AT GREATER PROFITS, THAT THE PARCEL POST HAS BROUGHT TO THE POSTAL SERVICE MORE THAN PAYS FOR THE EXTRA LABOR IT ENTAILS

mountains and through forests on horse, mule, wagon, stagecoach, or even snow shoes, plays his part in advancing civilization. At certain times of the day the mailing departments of the large city post offices are piled mountain high with bundles and packages; forces of shirt-sleeved men work day and night sorting them out, throwing the smaller into their appropriate bags, placing aside for careful treatment the parcels marked "fragile" and "perishable," and loading into mail wagons the bulging canvas sacks. The rapidity with which these enormous masses disappear under expert handling, the expedition with which they find the way from sender to receiver, the comparatively few complaints made about breakage and losses — all these things emphasize again this quiet revolution in transportation.

MR. JOHN C. KOONS
THE DIRECTOR OF THE PARCEL POST, WHOSE EFFICIENCY IS LARGELY RESPONSIBLE FOR ITS SMOOTH OPERATION

European travelers no longer express their amazement at the hostility of the American post office to articles of merchandise. They do not now call our attention to the fact that one can send packages more cheaply from San Francisco to Germany than to Oakland or Sacramento. John Wanamaker's four famous reasons for the absence of a parcel post — always quoted in an article

SOME KINDS OF MAIL MATTER THAT NOW GO BY PARCEL POST

like this — are only reminiscently amusing. The flaming wrath against the express companies has changed to one of pleased satisfaction. The express companies themselves, in place of their former arrogance, are now pleading for mercy. One has announced its intention of suspending; the others have their backs against the wall in a struggle for their lives. In other directions the parcel post shows its influence. For the first time since 1883, the Post Office Department has what seems to be an actual surplus. Al-

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MR. ALBERT S. BURLESON

POSTMASTER-GENERAL OF THE UNITED STATES, WHOSE FAR-REACHING EXTENSIONS OF THE WEIGHT LIMIT OF PARCELS AND REDUCTIONS OF RATES HAVE GREATLY WIDENED THE USEFULNESS OF THE PARCEL POST AND HAVE BROUGHT IT INTO DIRECT COMPETITION WITH THE EXPRESS COMPANIES

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A STREAM OF PARCELS DESCENDING TO THE SORTING TABLE

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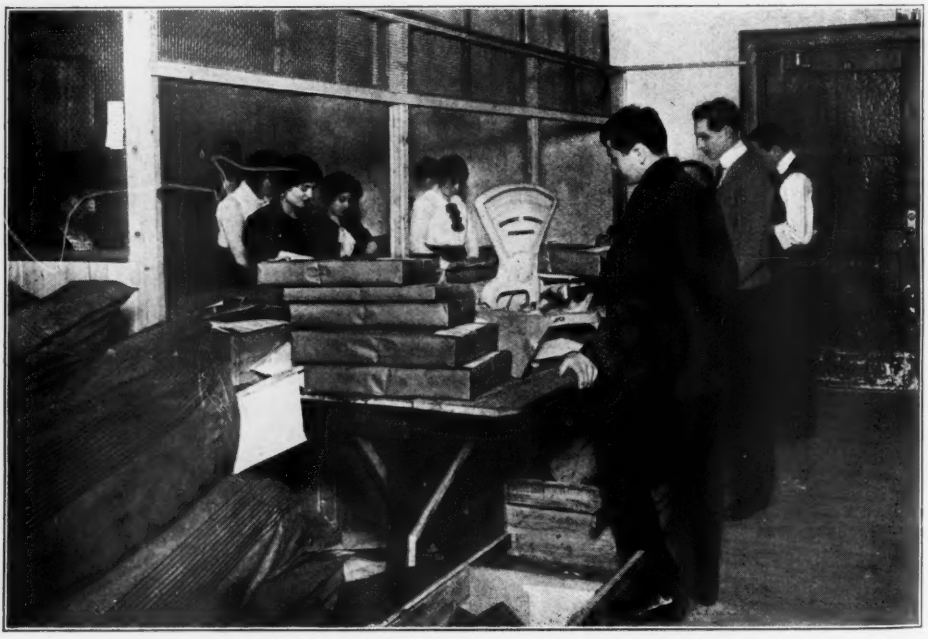
THE PARCEL POST AND THE MAIL-ORDER BUSINESS

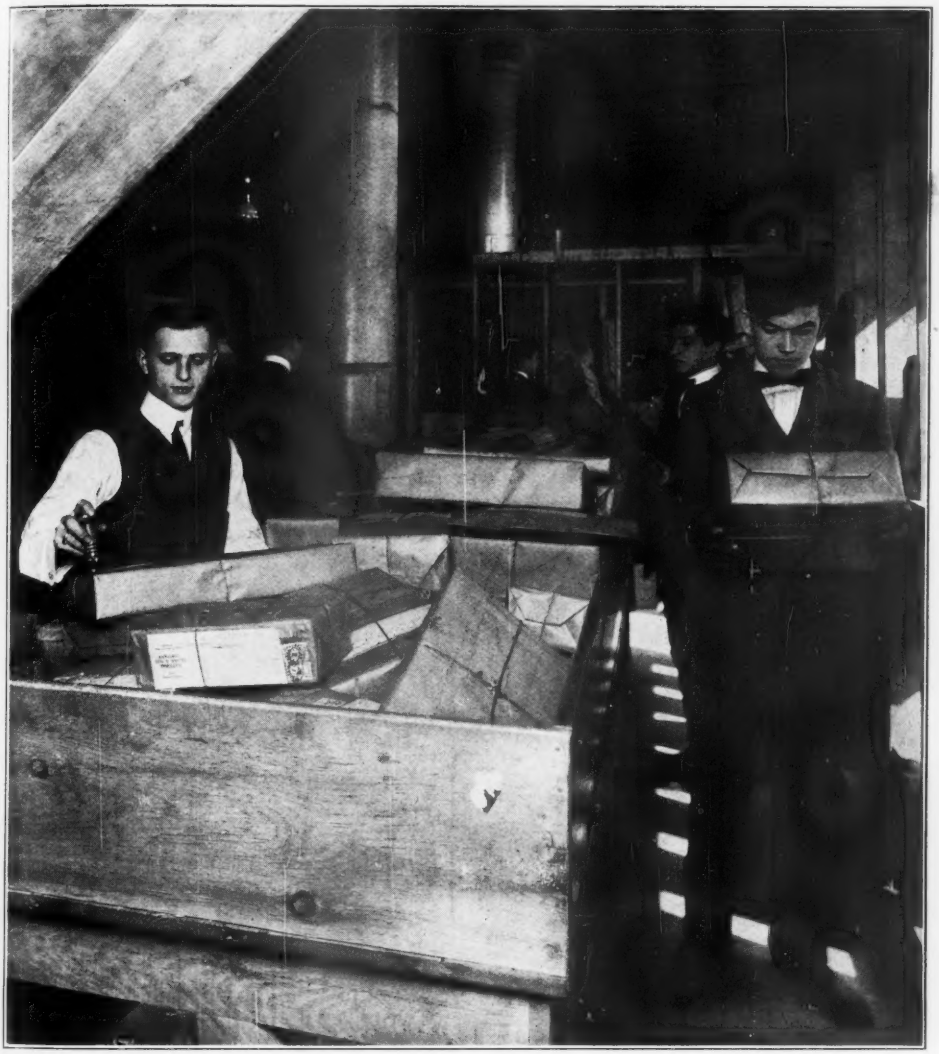
I. WOMEN'S SUITS STARTING ON THEIR WAY THROUGH THE MAILS TO ALL PARTS OF THE UNITED STATES

ready its success is stimulating thought along similar lines. Governmental ownership of telegraphs and telephones is the announced policy of the present post office



THE PARCEL POST AND THE MAIL-ORDER BUSINESS

II. WEIGHING THE PACKAGES AND CHECKING THEIR DESTINATIONS TO DETERMINE THE NECESSARY POSTAGE



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THE PARCEL POST AND THE MAIL-ORDER BUSINESS

III. GOVERNMENT CLERKS CANCELLING THE PARCEL POST STAMPS IN A BRANCH POST OFFICE IN A MAIL-ORDER HOUSE SO THAT THE PACKAGES MAY GO DIRECTLY TO THE TRAINS WITHOUT CLOGGING THE MAIN POST OFFICE

administration; whatever one may think of the same idea applied to railroads, it is unquestionably a more practical issue than it has ever been before. The importance of the parcel post, therefore, goes far beyond the service immediately rendered. Its demonstrated success through several years is likely to change fundamentally our conception of government. What, then, have been the results so far?

Up to January 1, 1913, when the new regulations went into effect, the United States had really had no complete system for the transportation of merchandise. The railroads were practically the only agencies used for this purpose. They transmitted the bulkier kind of freight at their own profit and their own risk. They had always regarded this kind of business as properly their affair; it was, in fact, their largest source of revenue. For some strange reason, however, they had farmed

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THE PARCEL POST WINDOW OF A CITY POST OFFICE

THE ZONE- AND RATE-CARD HANGS ABOVE IT WHERE THE PUBLIC CAN SEE JUST WHAT THE CHARGES WILL BE

out the transportation of smaller packages — articles that needed to go quickly on passenger trains — to private companies. These companies made a business of collecting such parcels in cities and towns and of delivering them in places of destination. With the exception of guarding them in transit, by means of messengers placed in baggage cars, the express companies performed no other service. The real work, that of hauling the parcels, the railroads did themselves; their capital, represented by track, stations, cars, locomotives, was what really performed the express service. The railroads and the express companies were practically partners in this work. The express companies did not pay a graded rate for transportation, as did private shippers; they made certain charges to the public, generally regarded as exorbitant, and divided these receipts almost equally with the railroad companies. Popular writers have emphasized sufficiently the evils, real and imaginary, of this system; these evils, however, did not constitute the basic iniquity. The social and economic wrong is apparent when we carefully study a railroad map of the United States. These railroad systems naturally penetrate only the commercially profitable regions. They link together the cities and towns and those sections of the country where business accumulates in considerable quantities. The express companies, having no transportation systems of their own, and being dependent absolutely upon the railroads, do the same thing. They furnish a service only where the railroads go — in the centres of large population. They skim the cream of the business. Unless one lives on a railroad line, or conveniently near to one, he has no express service at all. And in the smaller country districts reached by railroads the express service is only half what the large centres obtain; there is no "pick up" and delivery

service: one has to carry his parcels to the station and call for them himself.

Now there are 20,000,000 people in the United States — one fifth of the population — who live in sections not reached by any railroad. These people have had no way of enjoying even the expensive service performed by express companies. So far as this element was concerned, they were isolated from civilization. They lived in little towns and ranches, in lumber and mining camps, on inaccessible farms. They represented a valuable and worthy element in the population; precisely the type of pioneer and agriculturist that the Government is attempting to encourage. They were found, not only in far Western and middle Mississippi Valley states, but largely in the longest-settled communities. There were hundreds of thousands of them in New York, in Pennsylvania, and in New England. The express companies ignored these people simply because it did not seem profitable to serve them.

The Government, however, had organized its mail service on a different principle. It long ago adopted the policy of putting these people into communication with the rest of the world, whether it paid or not. It did this on the broad principle that without a mail service life would be so unattractive that the settlement of the country would be delayed; and that city concentration, admittedly one of the great evils of the time, would be intensified. National policy thus regarded it as necessary to subsidize the mails in these regions for the same reason that a subsidy for general education is justified. For several years it had indirectly taxed the people from $40,000,000 to $50,000,000 a year to bring the mails to these districts.

In this way the Government had built up a great and financially unprofitable plant. It had about 42,000 "rural carriers," who collected and delivered mail in the country. In addition it had about 12,000 men known as "star route" contractors. These picturesque individuals operated in sections where there were no railroads at all. They themselves performed the mail service that railroads perform in more thickly settled sections. The rural carriers really operated in a circle; they took the mail from the railroad points and carried it into the surrounding country, going back to the original headquarters. The star route contractor operated in a straight line, from post office to post office and return. Originally his business was simply to carry the mails from post office to post office: as time went on, however, a certain amount of delivery work developed.

Until January 1, 1913, the American citizen could mail a package weighing not more than four pounds at the rate of one cent an ounce. The total postage, on four pounds, was thus sixty-four cents.

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MAILING THE FIRST PARCEL

FORMER POSTMASTER-GENERAL HITCHCOCK OPENING THE PARCEL POST TO THE PUBLIC BY SENDING THE FIRST PACKAGE EVER MAILED UNDER THAT SYSTEM IN THIS COUNTRY

BRINGING THE CITY STORE TO THE RURAL HOME

A RURAL FREE DELIVERY CARRIER PUTTING A PARCEL POST PACKAGE IN A FARMER'S MAIL BOX

That was the American parcel post as it existed up to that time. As a result of the limitation in weight and the high tariff, merchandise, in practical quantities, was excluded from the mails. The enormous and expensive plant the Govern-

A NEW BOND BETWEEN THE COUNTRY AND THE TOWN

A FARMER SENDING HIS PRODUCE TO A CUSTOMER IN THE CITY BY WAY OF THE PARCEL POST

ment had built up to serve these 20,000,000 people was lying almost idle. In these days of scientific management, that was probably our most glaring illustration of inefficiency. On January 1st, however, the situation changed. The mails were then opened to packages weighing eleven pounds — afterward, in the first two zones, increased to fifty pounds, and in all others to twenty pounds — at comparatively low rates. In a twinkling the plant that had been largely idle and unproductive became a useful, going organization.

NO HARDSHIP TO RURAL CARRIERS

Greatly as this change stimulated postal business it brought no particular hardship upon the working force. Congressmen may talk eloquently about the sufferings the parcel post inflicts on rural carriers; in the main, however, these speeches are merely for political effect. The rural carrier, in most instances, has never been an overworked citizen. Those carriers who had spent two or three hours a day on a bicycle or horseback delivering letters naturally felt some inconvenience when their loads were so increased that they had to invest in more adequate equipment. Nearly all complaints from rural carriers turned out to be instances of this kind. Carriers, however, who had a proper equipment — a steady-going horse and a wagon — were not particularly overburdened by the increase in mail. In the majority of cases these wagons had been partly empty; and the increased mail from the parcel post simply filled them. Congress had already raised their wages $100 — increased this year by another $100 — in anticipation of this additional work; so that, except in a few instances of real hardship, they were much better off than before. There have been few complaints from the rural carriers; there are altogether too many applicants on the waiting list looking for their jobs.

With the increase of the mailable limit to fifty pounds, however, many distant wails have come from the star route contractors. These men are not salaried, but hold their positions under contract; the postal department lets out the star routes on competitive bidding, each man putting up a bond for the fulfilment of the contract. According to the stories reaching Washington, all kinds of queer things were now happening on these routes. Men who had never had the advantage of a freight train, to say nothing of an express service, now began to make the fullest use of the new convenience. One star route contractor in Idaho on a chilly morning found himself with three carloads of ore to transport, put up in fifty-pound sacks. A report came from a town in Wyoming that the post office, inside and out, was piled high with several tons of beans awaiting shipment to a local mining camp. The office, it was said, had been clogged for more than a month, while the weary contractor took the shipment away in daily instalments. At other places carloads of flour, put up in fifty-pound sacks, were found with postage stamps attached. On the bad mountain roads the drivers were frequently stuck for hours in the mud, their wagons piled several feet high with iron ore, sacks of potatoes, and other now legally mailable matter. In a certain town in Wyoming a number of tie-cutters left one camp to move on to another, eighty miles away. They had certain domestic impedimenta which they called bed and bedding — material that they succeeded in rolling up so that it complied with the parcel post regulations. Ordinarily they had had to pay the stage line five cents a pound for shipping this stuff; the lumbermen, however, had heard of the famous bean and flour and ore shipments and learned that they could mail their furniture for little more than a cent a pound. The local post office was almost concealed by this sudden increase in its business. "The joke is again on the star route contractor," was the comment of the local newspaper on the incident.

"I made a contract to carry the mails, not to be a freight train," this injured citizen wrote to the postal department.

A PARCEL POST TOWN

One case that was investigated by Washington illustrates not only the woes of these contractors, but the new service the parcel post performs. Silver City, N. M., is the terminus of a branch of

the Southern Pacific Railroad. From here for about a hundred miles stretches a road to Mogallon. This hundred miles forms a mail star route. Mogallon is a permanent mining camp of about 1,500 or 2,000 people; the miners live there with their wives and families, shut out, except for the mails, from all the comforts and advantages of civilized life. All their household supplies have come from Silver City; there was a local stage coach freight line, which dragged the things over the mountain road at an enormous cost to the sender — a cost that reflected itself in the expense of living.

But hardly had the fifty-pound limit become effective when merchandise began to accumulate in the Silver City post office, directed to Mogallon. The mine owners first learned the new virtues of the ordinary postage stamp; the star route carrier found carloads of crude oil and zinc plates awaiting transportation over the hills. He put on one or two additional teams — all at a great money loss to himself; but his troubles had only begun. The storekeepers in Mogallon now began to order all their ordinary supplies through the parcel post. Sacks of flour and sugar, casks of molasses, boxes of crackers, cases of breakfast foods, preserves, and all the other numerous things that stock a country store now flowed in by mail. There is little in the form of merchandise that cannot be compressed into fifty-pound sacks; in a few weeks, therefore, the whole town was eating new kinds of food and more of it by grace of the United States mails. The dealers, who had been paying the local freight, $3 a hundred pounds, now pay the Government $1.08. The news rapidly spread to the people, few of whom had ever heard of the parcel post. The catalogues of mail-order houses filtered into town; strange new things, like up-to-date women's hats and fashions in dress, now came into the mail for Mogallon; the people suddenly found themselves part of the outside world and the whole aspect of life as suddenly changed. Mogallon is now a parcel post town; it lives, eats, dresses, and enjoys itself largely through the mails. Not far from 10,000 pounds of the new matter enters the town every day. Moreover, by readjusting his compensation so that he can put on more wagons, the troubles of the star route carrier have disappeared.

SUBSIDIZING THE COMFORTS OF LIFE

The department has already readjusted arrangements on a considerable number of routes like that from Silver City to Mogallon. In hundreds of places in the Far West the parcel post will rearrange the life of people in these remote hamlets. Naturally it does this at a considerable loss. The star routes, however, have never paid for themselves and were never intended to. They were organized to subsidize some of the blessings and comforts of life in districts that had hitherto never known them. The justification in still further increasing this subsidy is that the parcel post, on the whole, yields the department larger profits.

Probably the makers of the parcel post did not have these outlying villages — many of them too small to get upon the map — so much in mind as the great rural population that lies along the free delivery routes. These sections, though fairly thickly populated, the express companies seldom reached. And here the parcel post renders the same service that the express companies render in town. Every day the rural carrier stops at the farmer's door; he takes anything the farmer wishes to send to town and delivers anything that comes. He is thus a channel through which trade can constantly flow between the city and the country.

20,000 PACKAGES A DAY

And this trade is already flowing in large quantities. It must be confessed, however, that this transit so far has been largely in one direction. By virtue of the parcel post, the cities, both large and small, have already annexed the rural districts; the country, however, has been more backward in putting itself in touch with the town. The greatest single patrons of the parcel post are the mail-order houses. Sears, Roebuck & Company, of Chicago, use it more than any other one firm or individual — on an average 20,000 parcels, representing $6,000 in postage, leave

its headquarters every day. A large force of clerks looks after this mail matter; the post office has established a special office in the store to handle it. Other big mail-order houses, in Chicago and New York, use the parcel post on an enormous scale. The larger department stores, that do a somewhat different business, are also increasing their sales by mail. People in the North and South are already learning to buy fine dress goods and the like from the finest retail shops in New York. The general anticipation, therefore, that the mail-order houses and the big city stores would increase their sales has been justified. This, it may be remembered, was an argument urged against the institution; there was some fear that their competition would drive the village and small city merchants out of business.

THE PARCEL POST AND THE TELEPHONE

But this fear evidently had little foundation. The small city and village merchants seem as enthusiastic about the innovation as are their larger rivals. For apparently it is increasing their trade also. The agricultural Middle West, for example, is a network of telephones. The farmers have learned to use this convenience almost as much as their city friends have. And here the telephones and the parcel post work beautifully together. The housewife calls up the village store and asks to have certain things — perhaps dress goods or household utensils — sent out immediately. In the old days she would have had to go to "town" herself, or have the "hired man" harness up, or wait for several days until some friend could do her errand. Now her purchase arrives in the morning with the rural carrier. The "C. O. D." system facilitates the operation. In the smaller cities the same expedition prevails. The local merchant finds that his area of patronage, which was formerly limited to the city itself, has a radius of 150 miles. He has one advantage over the mail-order house in a lower rate within this distance. Within this zone of 150 miles the rate is virtually a cent a pound; outside, it is larger. A merchant 150 miles from Chicago, therefore, has a large area within which, because of his lower postage, he can still do business. And the fact is, as already said, that the local merchants have already outgrown their apprehensions of the parcel post.

The admission of books to the parcel post, which became effective in March, greatly extended its value, particularly to these rural sections. This provides for their spiritual and intellectual needs as the original regulations did for their material welfare. Probably no one service will be more extensively used.

LITTLE COUNTRY-TO-TOWN BUSINESS

Still business flows from the city to the country; it does not yet flow in large quantities from the country to the city. This is certainly disappointing, in view of what the rural districts can really do for the town. Intermittent shipments of eggs, butter, asparagus, and even an occasional spring chicken pass through the mails; at Thanksgiving and Christmas, large numbers of turkeys arrived by postage stamp. There has been no movement, however, of sufficient quantity to affect appreciably the present cost of living. The middleman is still the great commercial monarch that he was. Probably the strongest plea for the parcel post was the inevitable dethronement of this ogre. Congressional orators pictured the several hands through which a dozen eggs or a pound of butter passed before it reached the indignant housewife. Statisticians attempted to prove that the American farmer got $6,000,000,000 a year for his product, and that the consumer paid $13,000,000,000 — the difference, a trifle of $7,000,000,000, passing into the hands of an "economic parasite" known as the middleman. Mr. Benjamin F. Yoakum, in an article in this magazine, said that the trouble was not the "high cost of living," but the "high cost of selling." For these evils the parcel post looked like the simplest remedy. By this means the farmer could do his products up in neat parcels and mail them directly to the city consumer. He would get something more; the city dweller would pay something less; and each party to the transaction would be much better off. In certain cases such an interchange is going on; any large

movement, however, has not yet taken place. Every farm is not yet a "mail-order house" for the city.

The reasons are plain. In the first place it is not easy to pack farm produce for transmission through the mails. If you are going to entrust a dozen eggs to the mails so that they can be put into a sack and thrown off a train going at the rate of sixty miles an hour, you must be an expert packer. The thing can be done, but not everybody can do it; the process, too, is an extremely expensive one. This whole problem of packing proved to be difficult. A fish done up in ordinary brown paper is not only likely to arrive in rather sad condition, but usually has an unfortunate effect upon neighboring parcels. Eggs or other animal matter that leak through upon a lady's new Easter hat produce complications. The real difficulty in this "town and country" movement, however, is that farmers and city folk, though not far apart, are not largely acquainted with each other. The farmer doesn't know to whom he can sell his produce; the city housewife doesn't know who has it to sell. The Postmaster-General is making intelligent efforts to remedy both these difficulties. Perishable matter, such as eggs, fruits, and poultry, is now handled "outside the mails;" that is, is not put in sacks, but kept separately in the car. The department is also seeking to find the right kind of "containers" for recommendation. It has just started a campaign intended to bring together the buyer and seller. As an experiment, rural carriers in certain districts will collect the names of farmers who would like to enter directly into business relations with city people. These names will be printed and given to prospective buyers, perhaps distributed in cities by letter carriers. The city housewife can select some farmer with whom she can deal regularly through the mails. If the plan works successfully in selected areas, it will be adopted all over the country. There seems no reason why it should not succeed. There are many city women, of course, who are lazy and unthrifty and market in haphazard fashion because it saves them trouble. But there are probably enough of the other kind to make such a scheme practicable.

Though the parcel post has been operating only a year and a half, certain myths have already developed about it. One is that the Government has no system of accounting and, therefore, does not know what the new service is costing. Another is that the parcel post deficit is something Brobdingnagian. Another is that the Government is cheating the railroads in that it is paying nothing additional for carrying the parcels. The enemy says in one breath that the Post Office Department is losing untold millions — one authority places it as high as $100,000,000 a year; and in the next that the thing is paying only because the railroad and other carriers are being robbed.

EXPLODING SOME PARCEL POST MYTHS

No itemized accounting, of course, is made of each piece of parcel post mail. It is the very essence of the system that there should not be. The parcels are mail and nothing else, and they go through the department just like the rest of the mail. The department makes no effort to keep a record of every letter; if it did, the postage rate would probably be nearer ten than two cents; which is only another way of saying that there would be no postal service in the modern sense. Similarly, if the department kept an accurate account of everything put into the parcel post, the cost would be so high that there would be no parcel post at all. The express companies have to keep such records, largely because they operate in connection with railroads and have to have bookkeeping records to serve as the basis for division. According to Congressman Lewis, one of the principal authorities on the subject in Washington, this accounting system, outside of the payment to railroads, is the largest item of expense. For every package that goes through the express, there are eleven separate acts of accounting. In a package in the parcel post, on the other hand, the postage stamp performs all these eleven separate acts. That is what so greatly reduces the cost— what makes the parcel post possible at all.

Though the Government keeps no de-

tailed accounting, however, it is hardly fair to say that it has no idea as to cost. It determines this, with a reasonable degree of accuracy, by accountings twice a year. For the first fifteen days of April and October — seasons selected because they represent the periods of normal traffic — it takes account of every parcel going through the post offices in the fifty largest cities and in selected post offices in the smaller districts. Every parcel is weighed, its destination noted, the postage on it recorded, the cost of receiving and delivering it accurately computed. The parcel post history of these thirty days is believed fairly to answer any question that may be asked concerning its cost. The statistics, even when a large margin is allowed for error, pretty well dispose of the idea that the parcel post is earning a deficit. They show that 600,000,000 parcels were mailed in 1913, upon which the average postage was 10 cents. Making a generous allowance of $10,000,000 for error, this would give the department a revenue of $50,000,000. The most ingenious enemy of the parcel post cannot possibly figure how it is costing that much, or anywhere nearly as much. The largest single item of increased cost, the added compensation to rural carriers, amounts to only $5,000,000 or $6,000,000. As I have already said, the Government has not had to install a new plant to care for this business; it is simply using, in some directions extending, a plant already developed. It is in the position of the merchant who increases enormously the volume of his business without largely increasing his "overhead." The parcel packages really come under the head of "new business" obtained at a small cost. More clerks have been required, and more delivery wagons in cities; but these additional expenses are small compared with the greatly increased income. Indeed, the idea prevails in Washington that the Government does not dare reveal the facts about the parcel post, for fear that Congressmen and Senators, inspired by constituents, will set up a howl for an increase in the pay of rural and city carriers.

But all these profits, it is urged, are made at the expense of the railroads. Any one can make money in the express business, we are told, if he doesn't pay for having the parcels carried. Here, again, the facts are not quite as they are related.

ARE THE RAILROADS BEING ROBBED?

The New York Central and the Pennsylvania Railroad, for example, receive 30 per cent. of all the money paid to railroads by the American Government for carrying the mails. As a result of the increased business of the last year, mainly the product of the parcel post, these roads have received an increase of nearly 50 per cent. in compensation! So far as 30 per cent. of railroad pay is concerned, therefore, there certainly is no case of "robbery." These transportation systems owe their good fortune to the fact that their year of "weighing" came into 1913, immediately after the parcel post began. All this confusion about railroad pay for parcel post is explained by the present system of compensation. It is impossible to weigh each sack of mail as it goes upon the railroad and pay accurately by weight; if the Government did this the mails could scarcely move. The department, therefore, has an elaborate system of "averaging it up." On every railroad the mails are weighed once in four years for 105 days, and an average taken for those 105 days. On this basis the compensation is fixed for the next four years. The country is divided into four sections, one section being weighed every year. Last year the eastern states were weighed; this year it is the turn of the Pacific region. By the time this article appears, therefore, the parcel post compensation will be readjusted in about half the country — and that the half with by far the largest traffic. Until these weighings are made, Congress provided that increased compensation should be made to all the roads not to exceed 5 per cent. In some cases this increase was more than enough to make up for the parcel post; in many it was not enough. If the increased railroad pay, as finally arranged, should amount to 25 per cent., it would add about $12,000,000 to this item of expense — an amount that would fall far short of devouring the increased revenue derived from that source.

It is not unlikely that there are railroads that are being unjustly treated by the Government in payments for the parcel post. Mr. Howard Elliott, chairman of the Board of Directors of the New Haven Railroad, makes this claim in his recent statement to stockholders. There is no disposition at Washington, however, to make any such situation permanent. Congress, at the present writing, is conducting an elaborate investigation of the question of railroad pay, with the idea of putting the whole thing on a scientific basis.

EXPRESS COMPANIES DESPERATE

But the most picturesque aspect of the parcel post, of course, is its effect upon the express companies. At the present moment their troubles seem fairly overflowing. The Postmaster-General, by increasing the weight limit in the first two zones to fifty pounds, and decreasing the rates, immediately pushed the parcel post into the express company field. At the same time the Interstate Commerce Commission cut down the express company rates everywhere. As things stand at present it is far cheaper to use the parcel post up to the 300-mile limit; beyond that the express rates are generally lower. The Government has the advantage on the short haul, the express companies on the long. Merely by increasing the weight limit to 100 pounds — something quite likely to happen soon — the express companies would be practically closed out of this profitable short-haul business. As things stand at present, the express companies can perhaps survive, but with decreased earnings; any extension of the parcel post, however, as they say themselves, would end their occupation. "We can stand what we've got, but for Heaven's sake don't give us any more!" That fairly expresses their attitude. Inasmuch as the extension of parcel post seems fairly inevitable, the outlook for the express business in the United States is not especially promising. Significantly, in Europe, where the 110-pound parcel post quite generally prevails, there are no express companies.

The United States Express Company is already preparing to close up; that is not especially significant, however, as its financial condition has not been strong for several years. All other companies have had material decreases in earnings; nearly all have had to reduce their dividends. But a new spirit has taken possession of the express business. The old attitude of indifference and even of arrogance has disappeared. In the Wells Fargo, especially, a new administration has taken hold and is making all human efforts to adjust its business to the changed conditions. It recognizes that the express business, if it is to endure, must be something very different from what it has been. It is searching all its departments, cutting out waste, installing new methods. The modern watch-cry of efficiency has reached its offices. It has called in several of the devotees of scientific management, and it has organized its own commission on efficiency, composed of five of the higher officers, who spend the larger part of their time traveling over the lines, instituting economies and introducing new business methods in all departments. It has organized a food products department, which is attempting, like Postmaster-General Burleson, to bring together the farm producer and the city consumer. It is the theory of the Wells Fargo Company that, whatever the postal authorities try to do, there are still things that a properly organized express company can do still better. The element of "personal service," the ability to give minute attention to shipments, the fact that they guarantee against loss and breakage, that they call for as well as deliver parcels, that they keep records, and can be trusted to carry valuable packages which one would hesitate to drop into the mails — these things, they agree, give the express companies a distinct advantage over the parcel post.

In the new attitude of the express companies there is a touch of humor. Their every effort is now bent on conciliating the public. They are even sending out instructions to the employees giving them points on etiquette. An agent who receives a parcel is now told to say "Thank you." If it is a lady, he is enjoined to "lift his hat." Certainly the parcel post has accomplished something.

TEACHING COUNTRY TEACHERS TO TEACH COUNTRY LIFE

THE REMARKABLE WORK OF DR. SIDNEY G. GILBREATH AND HIS ASSOCIATES OF THE EAST TENNESSEE STATE NORMAL SCHOOL WHO ARE SENDING OUT HUNDREDS OF MEN AND WOMEN EQUIPPED TO IMPART THE SCIENCE OF RURAL LIFE AND INSPIRED WITH MISSIONARY ZEAL TO SERVE THEIR COMMUNITIES

BY

WALTER A. DYER

DAVID RILEY HAWORTH is professor of Ancient Languages at the East Tennessee State Normal School. A title like that is a good deal of a burden for a man to lug about when he starts out to become an apostle of country life. But Professor Haworth doesn't let it hamper him; he forgets it.

Last summer Professor Haworth was conducting a teacher's institute at Athens, in McMinn County, Tenn., and it struck him that there was a good deal of lost motion in the theorizing and experimentation that made up the work of the institute. Why not get out and do a little laboratory work in the field and make it mean something?

So one morning he said to his class of country-school teachers, "The problem to-day will be, how to clean up a rural schoolhouse."

He led them out into the country to a district primary and grammar school that stood in all the forlorn sordidness of back-country neglect. It was a small, one-room building with a tumble-down outbuilding in the rear and a big oak tree in front. There were several clapboards missing, and at one side of the front door the wall presented an irregular open-work design. The steps were broken and crooked. The portion of the chimney which appeared above the ridge had apparently long since abandoned any attempt at co-operation among its component parts. One or two window panes were missing. An indication of paint or whitewash here and there served only to intensify the building's degeneracy. Inside, the floor was knobby and splintery and not at all clean. The stove and smoke-pipe were rusty. The benches were broken, comfortless, and marred by jack-knife carvings. A box resting casually on wabbly legs represented the teacher's desk.

The inspection took place at eight o'clock in the morning, and presently a load of supplies arrived, which Professor Haworth had previously secured in some miraculous manner — paint, lime, bricks, shingles, clapboards, planks, and modern school desks. Then followed a practical demonstration of how to clean up a schoolhouse. The steps were rebuilt, the outhouse repaired and remodeled, the missing shingles and clapboards and window panes replaced, the top of the chimney relaid, and the exterior of the building painted. Within, the floors were repaired, scrubbed, and oiled. The old benches were torn out and the new desks set up. The stove and pipe were given a coat of bronze. A new table replaced the sketchy desk of the teacher. One of the windows through which the sun had been wont to shine into the pupils' eyes was boarded up and book shelves were built in and hung with curtains. A four-foot band of blackboard was painted around the room. Then the litter was cleared away and the grounds cleaned up, and at four o'clock in the afternoon the squad of teachers signed Q. E. D. at the end of the day's problem.

That is the way Professors Haworth and Mathes and Wilson and Sowder and

Miss Armstrong and President Gilbreath and the rest of the faculty of the Normal School are teaching the teachers of East Tennessee and incidentally raising the standard of rural life throughout thirty-four counties. Perhaps they don't realize that they are doing their particular job any better than most other normal schools, but they are.

SCHOOL PROPAGANDA WITH A BANJO

The beginnings of their work go back ten years or more to the time when Dr. P. P. Claxton (now United States Commissioner of Education), the late Seymour A. Mynders, Dr. Sidney G. Gilbreath, and one or two other enthusiasts in the state cut the Gordian knot of political red tape and went before the people with the problem of the rural schools. These schools were pretty bad. Tennessee was still in the drowsy Dark Ages of popular education, and state and county authorities were selfishly withholding educational advantages from the people.

But Mr. Claxton and Mr. Mynders wouldn't let the authorities of Tennessee alone. The authorities did not want to wake up, but the bell had rung. One night Mr. Mynders, who had been denied a hearing before a certain Honorable County Court, hired a wagon and a Negro with a banjo and started an evangelistic campaign in the streets. He preached better schools to the people, and when he returned to Nashville he received a letter from that County Court asking him to come back.

That's the way it started. It ended in the General Educat on Act of 1909, which authorized three state normal schools besides an industrial normal school for Negroes, and set aside 25 per cent. of the gross revenue of the state for public educational purposes. This bill was amended in 1913 by the increase of the educational appropriation to $33\frac{1}{3}$ per cent. of the state's revenue, and Tennessee embarked on a state-wide campaign of school rehabilitation.

Dr. Claxton kept his rural school propaganda so vigorously alive that the new normal schools naturally assumed a character almost unique among the normal schools of the United States. They are organized about the central idea of practical service to the country districts, which comprise more than 75 per cent. of the total population of Tennessee.

In France the courses in the normal schools are made to include such instruction as will enable the graduate teachers "to carry to the elementary schools an exact knowledge of the soil, the means of improving it, methods of cultivation, and the management of the farm and garden." At the McDonald Institute at Guelph, Ontario, special courses are given to fit teachers to conduct school gardening and agricultural work.

NORMAL SCHOOLS THAT SERVE

In this country we have looked to our agricultural colleges for our school garden instructors, our agricultural high school teachers, and our corn and tomato and poultry club conductors, and they have seldom received training in elementary school instruction. We are, however, gradually coming generally to realize that at least half the usefulness of the men who are trained in agricultural science lies in their ability to transmit their knowledge and that this ability to transmit knowledge depends largely upon the conscious development of the personality of the teacher, and the practice of tact, patience, and the social gifts. The realization of this necessity for combining the personal and professional equipment of the teacher with the technical equipment of the scientist has come largely through the experience of the field agents of the Government in working out their farm demonstrations. But the application of this principle to the training of the great body of school teachers to become practical instructors in country life has scarcely been begun. But the Tennessee State Normal Schools did not wait for a precedent. The sheer logic of the movement and the need that brought them into existence have shaped their character and made them perhaps unique. They preach the gospel of service in the home counties; they radiate the missionary spirit.

In none of them is this spirit so noticeable as at the East Tennessee State Normal School. Situated at Johnson City, Washington County, surrounded by noble

mountains, this school offers an object lesson in directness and efficiency to all who are interested in the rural school problem — and this school is not yet four years old.

When Washington County was selected for the school, the County Court at once appropriated $75,000 in bonds, and Johnson City gave $75,000 in bonds, free lights, and free water, and provided granolithic walks to the school grounds, which are about a mile from the heart of the town. The site, comprising about 120 acres on a beautiful hill, and worth about $60,000, was donated by Mr. George L. Carter. The Johnson City Traction Company extended its line to the school.

The buildings now include a main or academic building, a dormitory for women, a dining hall, including kitchen and laundry, a heating plant, and a residence for the president — all sightly, well equipped buildings of brick and marble. A dormitory for the male students is contemplated. The campus has been beautified, blue grass sown, 3,500 trees and shrubs planted, and a mile of macadamized road built.

More than 1,000 students every year now avail themselves of the advantages of the institution. Of these, 600 attend the summer school. Last fall 154 prospective teachers matriculated. In the winter 134 more students were added, part of them Tennessee school teachers who came for the short-term course. In the spring there were 400 more, chiefly teachers in search of advanced training. The expenses of one student for one term range from $34 to $50.

"LATIN AND COUNTRY LIFE"

This is not primarily a vocational school; the students receive ordinary normal school training, and the definite object of the school is "the education and professional training of teachers for the public schools of the state." But President Gilbreath and his faculty have caught the Claxton idea and have not been afraid to step outside the sphere of the usual normal school. Their courses are designed to fit teachers to handle the specific problems of the rural schools of Tennessee. And all the courses are correlated. Professor Haworth, for example, teaches not only Latin but country life as well.

Not to enumerate all the courses offered, a few examples of the way they are tied up to school and community life will suffice to show their practical character.

RELATING THE SCHOOLS TO LIFE

In the course on school management, "among the topics are . . . . the relation of the school to the community, school buildings and grounds, and the relation of the teacher to the parents and the community."

In the elementary reading circle course the text books are Carney's "Country School and Country Life" and Carver's "Rural Economics."

Among the exercises studied in the chemistry course are "the analysis of milk, water, ice cream, baking powder, and headache powders; the determination of food values; the analysis of soils."

In physiology, blood, food, and dietaries are studied; "sanitary control of food, air, and water; bacteria in relation to disease: the disposal of garbage; drainage; the prevention and control of communicable diseases."

In physics "consideration is given to such elements as have to do with the science questions of the home, the street, the school, the industries of town and country." In the physical training department playground methods are taught, and in art "the appreciation of color in dress and in home furnishings and decoration."

Agriculture, manual training, and domestic science and art are prominent courses. Professor William J. Sowder, of the school's agricultural department, says: "Throughout the United States there is a growing demand for the teaching of agriculture in the elementary schools. Scientific farming is based upon a body of facts underlying successful farm practice. Investigation at the experiment stations has made many valuable contributions to modern farm practice. This knowledge, valuable as it is, has not reached the masses. No greater agency for its dissemination exists than the public school. For this great work trained teachers are very much needed. To fit persons to instruct both in the science and in the art of agriculture is the sole purpose of this department."

The entire area of 120 acres is conducted as a farm, and a combination dairy and feed barn of modern design and equipment has been erected. Thoroughbred Jersey cows and Duroc-Jersey swine are used in demonstration of modern methods of farm management. Three and one fourth acres are divided into demonstration plats.

Professor Sowder's department offers courses in horticulture, elementary agronomy, animal husbandry, advanced agronomy, and farm management, all definitely applicable to conditions in Tennessee. In the summer term a course in agriculture for rural elementary schools is given. "It takes up the practical methods of teaching agriculture in the country school and includes instruction in the organization and management of corn clubs, tomato clubs, school-ground improvement associations, etc."

On the demonstration plats the students are given instruction in practical farm practice—fertilizers, tillage, varieties, rotations, etc. A small demonstration orchard has been planted and instruction is given to the women students in school-gardening work.

FARM GATES FOR ALL TENNESSEE

The industrial training departments occupy more than 4,000 square feet. The manual training rooms are furnished with complete modern equipment, and the students are taught to make additional equipment as it is needed. Courses in elementary and advanced woodwork are offered. A characteristic of these courses is the construction of useful objects instead of mere problems in joining and tool work. For example, the construction of a practical farm gate is one of the problems, and it may be interesting to note in passing that the school has received hundreds of requests for blue-prints of this gate from all over East Tennessee. Simple apparatus is also made for use in the objective teaching of mensuration and geometry, and in laboratory demonstrations in agriculture, physics, and chemistry.

One particularly interesting course in the paper industry is offered for teachers of grammar school pupils. The course aims to show the possibilities of introducing an actual industry into the school-room at a minimum of expense for apparatus and material and, at the same time, of making a product that has actual commercial value. A simple system of bookkeeping necessary to the industry is part of the course. The work includes paper making by hand, box and envelope making, and book-binding.

Courses are also offered in textiles, basket-making, and mat-weaving, and a special course in industrial arts for public schools, dealing with the simplest elements of construction in paper, textiles, and clay.

The department of domestic science includes courses in cooking, sewing, home economics, and household sanitation. Simple dressmaking and the elements of food chemistry are taught. The home sanitation course includes the study of existing insanitary conditions in actual communities and their remedies, and the causes of prevalent diseases. A home canner affords not only a means for teaching the art and economy of canning, but is used to preserve garden products for the dining hall.

"The public school," says President Gilbreath, "is for the whole community, and as such should minister to the needs of the busy farmer and his wife. To this end the entire neighborhood should be enlisted in some coöperative movement for the improvement of local conditions." Suggestive of this type of public-school activity, a special short course in home economics, farm workshop, agriculture, horticulture, and live-stock is conducted during February and is attended by both regular students and men and women who are not regular students.

A VISION OF PRACTICAL HELPFULNESS

So much for the courses of study. They are well planned and well conducted, but it is the method, the point of view, that counts. Always, in this instruction of teachers, there is kept clearly in the foreground the vision of what it is all for: the ultimate aim of rural uplift. In this all the courses, Latin and agriculture, chemistry and domestic science, profess one object and coöperate to one end. While Miss Armstrong is preaching and demonstrating the importance of pure water supply, good drainage, and cleanliness,

Professor Wilson is teaching his students how to teach their boys to install simple systems of water supply and plumbing. While Professor Wilson is demonstrating the construction of a medicine cabinet for a home or a school, Miss Smith is showing how to supply it with simple remedies, is giving instruction in their use, and is offering proof of the danger of harmful drugs and patent medicines in a region where their use is frightfully prevalent.

APOSTLES OF BETTER LIVING

But the work of the East Tennessee State Normal School does not stop here. It might, without criticism, but it does not. All the members of the faculty are apostles of better living, and their field is the thirty-four counties of East Tennessee. It is not merely institute extension, though they conduct a dozen summer institutes in as many counties. It is home missionary work. They go to the people and preach school libraries, individual drinking-cups, improvement of school grounds and schoolhouses, home sanitation, village house cleaning, and the economic advantages of education. They are doing field demonstration work in country life. They attend school rallies and barbecues, striving to create public sentiment in favor of consolidated schools and agricultural high schools. They aid in forming boys' corn clubs and girls' canning clubs. They cooperate with the county superintendents. They visit the meetings of the County Courts, the bodies which appropriate the funds for the building of schools, and plead their cause. They buttonhole the politicians and circulate petitions and memorials. They are working everywhere to create social centres in the rural schools.

It is doubtful if this faculty, earnest as it is, would display such a unanimity of purpose were it not for the enthusiasm, genuineness, magnetism, and fertility of mind of the president of the school, Sidney G. Gilbreath. On him has fallen the mantle of Claxton and Mynders. He is a big man in every sense, with all the power of the big man to convince. It is he who radiates the missionary spirit that sends forth his professors to regenerate East Tennessee. Night and day he studies to make his institution more efficient for service, to draw its various departments closer together in the working out of a single purpose. He is one of those men of the New South who are succeeding in big things because they persist in doing a little more than what is required of them.

THE HOME MISSIONARY SPIRIT

Inevitably President Gilbreath's ideal of service, vividly reflected by his able faculty, kindles a fire in the bosoms of his teacher-students. The missionary spirit among them is obvious and universal. It amounts almost to a religious ardor. They come to learn how to be more successful teachers, and they go out missionaries.

A bright young man came down from one of the mountain counties to study Latin and pedagogy. He possessed native intelligence and a thirst for learning. He wished to become a teacher and he wished to succeed. He desired a better sort of life than his boyhood had known, and he was much concerned over his prospects. He called repeatedly at President Gilbreath's office and sought his aid in securing a place in a city school.

As the term neared its close President Gilbreath learned of an opening. It was a good chance for the young man, and the president could honestly recommend him. He sent for him and described the situation, offering to help the student to get it.

The young man went away to think the matter over, and when he returned next day he said, "I don't believe I'll take that place, President Gilbreath."

The president expressed his surprise.

"Since I've been here," said the young man, "I've got a different idea of things. I've changed my mind. I want you to get me a place in my home county."

"But, my dear fellow," remonstrated President Gilbreath, "there are no such positions to be had up there. This is a big school with great possibilities. The place will be a fine start for you, and the salary much larger than you could expect back home."

"I know," replied the young man, with evident embarrassment, "but I want to go back to the home county. I reckon they need me more up there."

A LESS KNOWN EDISON

MR. EDWARD GOODRICH ACHESON, A PIONEER OF AMERICAN INDUSTRIAL RESEARCH AND DISCOVERER OF CARBORUNDUM, ARTIFICIAL GRAPHITE, SILOXICON GRAPHITE LUBRICANTS, AND EGYPTIANIZED CLAY

BY

JOHN M. OSKISON

INDUSTRIAL research in America is so new that its pioneers are still living —most of them hardly past middle age. So new in this country is the idea that the manufacturer and the laboratory worker may form a profitable partnership that it must fight its way. Only a beginning has been made, but the research workers are hopeful; and why not? The story of a man like Edward Goodrich Acheson points to the magnificent opportunities that open ahead of workers with the scientific imagination.

More significant than the long list of formal honors he has received are the titles his good friends and brother chemists have bestowed upon Mr. Acheson, chemist-adventurer. Pathfinder, surveyor, switchman, brakeman, conductor on the road of industrial progress — thus one friend described him. "The Swiss Family Robinson of chemistry" is another's affectionate tag; and a third says that his achievements have turned out to be "classics for children as well as inspirations for chemists, dividend payers as well as contributions to science." At the age of fifty-eight, he represents the ideal American combination of research-worker and business man, scientist and captain of industry.

Mr. Acheson created the industry he captains. He educated himself in research work, and his self-dedication to that career did not become final until he was twenty-four years old. When he was sixteen, the family fortune went to smash; at this time, his father, an iron maker of Pennsylvania, recalled him from school to act as time-keeper at the furnace; shortly afterward, his father died and the iron business was lost. In the next eight years, the young man carried a chain in a surveying outfit, served as clerk in a dry-goods and notion store, as station agent, as resident engineer of a branch-line railroad, as tank gauger in the oil fields, and as inspector and collector for a pipe-line company. During this period the itch for experiment was developing, and he tried to drive the double team of research and regular work on a salary.

But that team would not pull together for young Acheson, and when he reached the age of twenty-four he screwed up his courage to abandon regular jobs like clerking in a store for the dim, alluring rewards of the inventor. With a new suit, and $100 in his pocket, he left the little town in Pennsylvania for New York — electricity was the lure.

New York was not expecting him, had no job for him; following a forlorn hope, the young man went to Menlo Park to see Thomas A. Edison. Mr. Edison looked up from his work at a long, bottle-strewn table, where he sat with coat and collar off and gay in a colored calico shirt, to cup a hand behind an ear (he was already growing deaf) and say:

"What d'you want?"

"Work!" shouted young Acheson.

"Go out to the machine shop and see Krussi," said Mr. Edison, and turned back to his bottles. To Mr. Krussi the seeker told a white lie:

"Mr. Edison sent me to you for you to put me to work."

"What kind of work?" demanded Mr. Krussi. On his way from Mr. Edison to Mr. Krussi, young Acheson had seen a draughting table, and as he had done some draughting while working with the railroad's civil engineers, he answered:

"Draughting."

"All right," said Mr. Krussi. "Mr. Hornig needs an assistant." Later Mr

Krussi found out about that white lie and, though he did not fire Mr. Acheson, he held him under suspicion for a while.

That was a glorious time and a glorious opportunity for a fellow interested in the development of electrical inventions. Mr. Edison was only thirty-three years old then, though world-renowned already for his electrical inventions. Just at that time, the men most deeply interested were looking expectantly to the "Wizard of Menlo Park" to solve the incandescent lighting problem.

"After I had been at Menlo Park long enough to feel at home," said Mr. Acheson, "I showed Mr. Edison a small dynamo I had made at Bradford [while working for the pipe-line company]. He told me it was like the one designed by Siemens and advised me to go over to the library and get a certain book in which I would find a machine like mine described."

HELPING MR. EDISON TO INVENT

He was moved to the department where drawings for Mr. Edison's patents were made; one day Mr. Acheson captured an idea in connection with the perfection of an electrical meter — a task Mr. Edison was engaged upon — and he made a drawing to show to Mr. Edison.

"I don't pay you to make suggestions to me," reproved Mr. Edison. "How do you know but I already had that idea? Now, if I use it, you'll think I took it from you!" Mr. Acheson reassured Mr. Edison and the "Wizard" showed how genuinely he was offended by transferring Mr. Acheson to the original experimental department at higher pay.

"I was now in my glory!" said Mr. Acheson. He had demonstrated his capacity to think; and the rest of the story of his three and a half years' connection with the Edison enterprises is a record of the development of that capacity.

At length he felt hampered by the Edison organization, much extended by that time, and he broke away to become an independent experimenter on dynamos and the control of electrical currents. Practical success eluded him, and he took a job as superintendent of a small electric lamp factory — at $25 a week. He worked hard, increased output, and cut costs until his pay was raised to $35 a week; then a new, cheese-paring manager came along and cut his pay to $25 a week again, so he quit that job.

About this time he married and became a much-worried free-lance inventor and experimenter, seeking backing wherever he could find it, keeping himself and his wife on sums which ranged from $15 to $25 a week, and conducting his experiments in a sub-cellar so cold and damp that he left his day's work chilled and numb from waist to feet. Two years of this he endured, with the first of nine children coming to share the family fortunes.

SOME EARLY FAILURES

"My experiments proved a failure." This brief tag was frankly hung on various pieces of hard work done by Mr. Acheson in his days of desperate striving to make good: he had the sense to know when he was beaten. His first work, after leaving Mr. Edison, on the regulation of dynamos and the control of electrical currents, turned out a failure. With the backing of two directors of the electric lamp company that had employed him, he began to work out a new type of dynamo — it was a failure.

A critical moment for the inventor! But he chanced upon relief; on a corner of Broadway in New York, he met the late John S. Huyler, the candy maker. Mr. Huyler remembered him as an interesting fellow-passenger on a transatlantic steamship when Mr. Acheson was going over to take charge of the new Edison lighting plant in Paris. In the course of their street-corner talk, Mr. Huyler said that he was interested in a plant in New York City which was working out certain problems connected with the manufacture of insulated wire for electrical use. Mr. Huyler was pessimistic, and he asked Mr. Acheson to join in the experiments until something definite had been determined. The shift was arranged — and soon Mr. Acheson advised giving up the work and shutting down the plant. Another failure!

Mr. Huyler had been paying the young man $25 a week; at $15 a week, Mr. Acheson induced the candy maker to back him in working out an anti-induction telephone

wire. He was so far successful this time that he procured a patent, but no one wanted to buy it; he coiled the new cable down beside his white elephant dynamo and posted a sign above them: "Failure!"

In a state of mind which he refers to as "desperate," Mr. Acheson welcomed a call from an older brother who had gone into the iron business to return to the little town in Pennsylvania and conduct some experiments in the reduction of iron ore by using natural gas.

Another failure! With his family, Mr. Acheson moved out of his brother's house to Kittanning, forty-four miles up the Allegheny River from Pittsburg, and he could think of nothing more hopeful than to try again to sell his patent for an anti-induction telephone cable. To that end he opened negotiations with a cable-manufacturing company at Pittsburg; foreseeing that the dealings would be long-drawn-out, he pawned his gold watch chain to help pay for a monthly railroad ticket between Kittanning and Pittsburg.

HIS FIRST SUCCESS

The late George Westinghouse came nto control of the cable company during that month, and a few days later Mr. Acheson achieved the first success of his career as an independent experimenter and inventor. He sold his patent to Mr. Westinghouse for $7,000 cash, $50,000 stock in the cable company, and a contract to work as electrician for the company for three years at $2,000 a year. Of the cash payment Mr. Acheson turned over $5,000 to Mr. Huyler to reimburse him for money spent on Mr. Acheson's experiments, and the other $2,000 went to the brother.

After three good years with the cable company, Mr. Acheson again took up the career of an independent experimenter. In an abandoned power house at Allegheny City, he tackled the problems arising from the conversion of heat into electrical energy; a syndicate of hopeful Pittsburgers backed him. "Indifferent success," says Mr. Acheson, rewarded his efforts. Failure again!

With his next group of backers, Mr. Acheson acquired a small electric lighting plant at Monongahela City, Pa.; his idea was to use it by daylight as an experimental laboratory and at night to illuminate the town. It was to be self-sustaining financially.

But Monongahela City already had a gas-lighting plant, and the people did not show any strong inclination to switch to electricity. In order to get business enough to keep the company from ruin, Mr. Acheson became active politically and turned the town's officials from anti-electric light Republicans to pro-electric light Democrats. Then he settled down again to his experimenting.

Synthetic rubber was the first thing he tried. He actually produced a small piece; then Mr. Huyler, one of his backers, came from New York to look over the plant. Mr. Acheson told Mr. Huyler about the artificial rubber.

"Synthetic rubber — bah!" Mr. Huyler said that he had just gone into a rubber-plantation project in Mexico, and that they intended to produce more natural rubber than the world could ever use. "Shut up your plant and throw it into the Monongahela River!" advised Mr. Huyler.

"His remarks discouraged me regarding rubber," said Mr. Acheson. "I dropped the subject, and I did not even keep a record of the processes I used to produce my sample." Next he turned his mind to the production of an artificial abrasive.

HOW CARBORUNDUM WAS INVENTED

This was in the winter of 1890-91, when Mr. Acheson was 35 years old. Back in some brain-cell had lain since 1880 the memory of a remark made by a young gem expert, George F. Kunz, who had gone to work for Tiffany in 1879. Born the same year, the two young men had met in 1880; in the course of a conversation, young Kunz had remarked, incidentally, that a successful artificial abrasive ought to have commercial value.

Along with that ten-and-a-half-year-old remark, Mr. Acheson drew from another pigeon-hole of his brain the memory of what had happened one day while he was making experiments with natural gas for his brother. He had passed natural gas into a highly heated furnace containing some clay articles. On withdrawing these

from the furnace, he found them impregnated with carbon, and they seemed harder.

Mr. Acheson inferred that the carbon given off by the natural gas had produced the hardening. Now he set out to reproduce that same result with electric heat by mixing a batch of clay and powdered coke, putting it in a plumber's iron bowl, and running an electrical current through it. To the bowl he attached a lead from his lighting dynamo, and to another lead he attached an arc light carbon and thrust the carbon into the batch of clay and coke. The mess melted all right, but when he cooled and examined it he was not encouraged. By "sheer chance," however (so Mr. Acheson says), he noticed a few bright specks on the end of the arc light carbon; they interested him.

"I placed one on the end of a lead pencil," he said, "and drew it across a pane of glass. It cut like a diamond. I repeated the experiment, and collected enough of the material to test its abrasive qualities. I mounted an iron disk in a lathe, and, oiling its surface, applied the material, which adhered; with this revolving disk I cut the polished face off a diamond finger ring that I owned."

In this fashion was born "carborundum," an abrasive material which has come into universal use in all sorts of shapes, and the manufacture of which has become a tremendous industry.

NAMING A NEW PRODUCT

After much patient work in the lighting plant at Monongahela City, the experimenter collected enough of his bright specks to take to lapidaries in New York; a druggist friend from the little town went with him, and on the train they worked out the name of the product. They thought "carborundum" was accurately descriptive, for they believed carbon and corundum were its two elements. They were wrong, but the name stuck.

In New York Mr. Acheson found a diamond cutter who consented to try the new abrasive; his first achievement was to repolish the surface of the diamond in Mr. Acheson's ring. Then he bought the small vial of the specks that Mr. Acheson had brought — paid 30 cents a carat. The proceeds amounted to enough to purchase a fine microscope.

As an experimenter, Mr. Acheson had made good at last; there was no doubt about the value of "carborundum" as an abrasive. He could make it, but the next question was, who would buy it? The lapidaries could use only a very small amount, and the emery-wheel makers said that they could not turn the new material successfully into wheels. But by this time it took a good deal of discouragement to halt Mr. Acheson. He organized the Carborundum Company, with a capital of $150,000, and turned over a third of the stock to the lighting company as compensation for the use of its facilities in experimenting. This was in September of 1891.

Mr. Westinghouse, who had secured the contract for lighting the buildings of the Chicago World's Fair, gave Mr. Acheson his first big order — 60,000 small wheels to be used for grinding the joints of two-piece electric light lamps. With his own hands Mr. Acheson turned out this order, and with the $7,000 received for the wheels he bought for the Carborundum Company its first dynamo, thus formally divorcing that enterprise from the Monongahela Electric Light Company.

Next Mr. Acheson made up with his own hands 12,000 tiny carborundum wheels, embedded them in lithographed cards bearing the invitation, "Try me wet or dry," and mailed them to 12,000 dentists; and the experiment paid.

AN UNSUCCESSFUL EXPERIMENT IN FINANCE

To follow the story of the development of the company would have no especial point except to illustrate Mr. Acheson's persistent enthusiasm and what is likely to happen when the scientific experimenter first attempts the intricacies of finance. Mr. Acheson went to Europe and sold his patents on "carborundum" for so much real money that he came back and convened the board of directors of the company and proposed that it be removed from the plant at Monongahela City, where half the output of a 134-horse-power plant was being marketed, to a 1,000-horse-power plant at Niagara Falls — that was how optimistic he had become.

Mr. Huyler and the other directors said Mr. Acheson was crazy; but as the inventor retained control of the company all they could do to show him what they thought of his project was to resign. They did.

To move to Niagara Falls, Mr. Acheson had to find new financial backing. It was furnished by bankers. They lent the company $50,000 and took its bonds and a bonus of stock; through this and subsequent deals, the bankers gained control of the company, and, as soon thereafter as it could be done they dropped Mr. Acheson from the company. Within a few years, the company was turning out ten million pounds of product a year, the capital stock had grown to $600,000, and Mr. Acheson was able to sell some of his minority holding of this stock at par.

THE DISCOVERY OF ARTIFICIAL GRAPHITE

Out of power in the Carborundum Company Mr. Acheson felt the need for providing something else to occupy his talents and to insure his family's financial future. He took up the study of a product he had secured while experimenting with "carborundum" — a beautiful graphite core which remained after certain silicon elements had passed off as vapor from highly heated "carborundum." He called this remnant of graphite "the skeleton of the original carborundum crystal."

How to produce the graphite in quantity and how to utilize it in commercial processes — here were the problems he tackled. Up to the year 1899, he had taken out a number of patents on processes connected with the production of the artificial graphite; in that year he formed a company to exploit them.

When Mr. Acheson told the bankers about the new company, they demanded 40 per cent. of the capital stock; they claimed it under an old agreement (made before they dropped Mr. Acheson from the Carborundum Company) under which they were to furnish capital for the organization of a carbon company. They had never furnished any capital, and Mr. Acheson supposed that the old agreement had lapsed. He vigorously opposed their claim. After a period of warring, Mr. Acheson agreed to compromise by giving them 25 per cent. of the new company's stock — $250,000. By 1910, the graphite plant was using 5,000 horse-power from Niagara Falls and was turning out ten million pounds a year. Mr. Acheson has retained control of this company, whose capital has grown to three million dollars. The experimenter has become a financier.

AN INVENTIVE SWISS FAMILY ROBINSON

Mr. Acheson received the Perkin medal in January, 1910; it is looked upon as the highest approval which can come to an American industrial chemist. At the meeting of the New York section of the Society of Chemical Industry, when the medal was presented, Dr. Wilder D. Bancroft, of Cornell, a fellow scientist, made an illuminating speech about Mr. Acheson's work. In it he said:

"There is a logical sequence about his inventions which delights the soul of one like myself who lectures on electrochemistry. Mr. Acheson invented carborundum; the carbon in the cone of the furnace changed partially to graphite, and he worked out a method for preparing graphite as a commercial product. Then, on the outside of the carborundum layer was a ring of 'white stuff' — and Mr. Acheson organized a company to manufacture 'siloxicon'!"

Dr. Bancroft went on to show how one discovery had led to another, following that delightful logical sequence which he had noticed.

Then Dr. Bancroft drew a parallel between Mr. Acheson and the Swiss Family Robinson. You remember: After the shipwreck, when the family went in search of food, they discovered a bread-fruit tree across a stream with sandwiches growing at the top. They crossed the stream on a cantilever bridge constructed with the aid of a bow and arrow and a dog. They next discovered a palm tree with cocoanuts growing at the top; in order to get at the cocoanuts, they discovered a shark stranded in the shallows and made climbing gaiters of its skin. After getting the cocoanuts down, the problem remained to open them. Whereupon the Swiss Family Robinson discovered a crab with sharp claws; they induced the crab to insert its claws in the

hole in the cocoanut and spin a yarn which broke its shell and enabled them to get the milk in the cocoanut!

To those who heard, knowing the history of Mr. Acheson, it was a delicious parable.

Like "carborundum," Mr. Acheson's graphite productions have become known all over the world, and their uses have multiplied. From the hardest forms, like the electrodes used in electric furnaces, to the soft, "unctuous" polishes and the "deflocculated" forms which are dissolved in water, oil, or grease and used as lubricants, artificial graphite has proved a valuable new commercial element.

WHY EGYPTIANS USED STRAW IN BRICKS

In working out "siloxicon," his mind was led into a strange channel — and he found out why the Egyptians used straw in making bricks. See how the scientific imagination tackles a problem:

"I reasoned that the greater plasticity and tensile strength as found in sedimentary clays were imparted to them during the period of transportation from the place of their origin to their final beds."

This was in the period when he was trying to find clay in America as good for making crucibles as that imported for the purpose from Germany — he wanted the crucible trade. In thinking over the change in character of clay during its movement from the original bed, he decided that whatever change occurred must be caused, not by the water which carried it, but by the impurities in the water; these would naturally consist largely of the washings of the forests. He began to treat clay with various extracts of plants, among them tannin. A dilute solution of tannic acid was effective in making clay more elastic and stronger — in some cases, 300 per cent. stronger. So treated, clay remained diffused in water, in so fine a state that it would pass through a filter paper. Less water by 40 per cent. was required to produce a given degree of fluidity.

"These effects," said Mr. Acheson, "seemed remarkable, and I thought they might be of considerable use in clay working. Knowing that clay working was one of the most ancient of arts and very extensive in practice, I wondered if this effect were known. I made a search of all available literature, and only one reference could I find to the use of vegetable matter in clay working, and that was in the Bible where we are told that the children of Israel, under the instructions of the Egyptians, used straw in making bricks

"The fibre of straw is very weak, not nearly so valuable as a mechanical bond as many other vegetable fibres available to the Egyptians, and I thought they must have used straw for another reason. Straw contains no tannin, so if the effect I had obtained was due to tannin only it was not likely to be produced by the extract of straw.

"I boiled some straw in water and found that it dissolved to 50 per cent. of its weight and when it was used to treat clay it acted like tannin. Having determined this fact, I now thought that the Egyptians must certainly have been familiar with this effect, and in that belief I called clay so treated and dried 'Egyptianized clay'."

Thus is revealed the Acheson mind at work, unhampered by precedent, uncluttered by formulas, pursuing with patient logic a thought which promised to turn into something practical, rising to the heights of practical achievement through a poet's flight of imagination.

To his friends he is Acheson the well-loved; sheer genius (that old capacity for taking infinite pains) has characterized his career as a maker of friends, as an experimenter, and as an organizer of industry. Offices in scientific societies, medals, degrees, have been bestowed upon him. He has collected them as eagerly and in the same spirit as he has collected automobiles; probably in the same measure he enjoys them. The great truth about life, as he sees it, however, is that it is a wonderful adventure; its interest and excitements will last clear to the end!

DOING BUSINESS BY THE WEATHER MAP

HOW THE WEATHER BUREAU ENABLES MANY MEN TO INCREASE THEIR PROFITS AND ENABLES OTHERS TO PREVENT LOSS

BY

ALLAN P. AMES

A YOUNG contractor, recently graduated from street-paving jobs into the broader field of reclamation work, went into bankruptcy, and his creditors met to learn what they could save from the wreck. Wishing to get the full benefit of an expensive lesson, they inquired carefully into the causes of the disaster; and most of them carried away the consoling notion that it was an exaggerated case of hard luck which discredited neither their own good judgment nor the honesty and ability of the bankrupt. A shrewd but kindly old banker, who held fifty thousand dollars' worth of the contractor's worthless paper, summed up the situation as follows:

"Jim's a genius at handling men and a wizard at figures; but when you have to out-guess old Boreas about the weather you need capital enough to cover up an occasional mistake."

Rain and cold weather had conspired to ruin the contractor, and had done their work thoroughly. He had figured to the last decimal the number of cubic yards of earth and rock he had to excavate and just how much cement was needed for his dams and reservoirs and just what it would cost to transport men and machinery from the nearest markets and to house and feed a regiment for a year or more in a sparsely settled region. It was a big conservation and irrigation project in a Western state. The work was more than half finished and the results thus far had justified his calculations, when the elements turned loose and in two weeks wiped out first his paper profits, then his small reserve, and finally his really excellent credit. A sudden freeze spoiled ten thousand dollars' worth of fresh cement work; the rains washed out his tramways and started a landslide that filled his deepest cut; a meandering little stream rose over-night in the hills of the adjoining state and swept away the foundations of his principal dam. About all that was left for his creditors was a couple of steam shovels, some rolling stock, a stack of hand tools, and a few thousand bags of cement.

This is a picturesque kind of so-called hard luck, popular with writers of stirring tales in which the heavy villainy is left to Mother Nature. Now, as a matter of fact, Nature is not the treacherous virago she is so often described. Year in and year out she follows a fairly reliable routine; and when she indulges one of her rare whims she gives due warning. If the unfortunate contractor, before submitting his bid, had consulted the records of the United States Weather Bureau, he might have learned the average date of the first hard frost in that region during the last ten years, and confined his cement work to a safer period. The same records would have warned him when to look out for excessive rainfall; and the nearest governmental observer could have told him that it had been raining hard in the neighboring hills for three days before the floods descended upon him.

This is not an isolated case. Examples of similar ignorance and neglect can be multiplied, not only in out-door work but in nearly every branch of commerce and industry. But there is more to learn from the experiences of men who realize

the practical value of the service and have coined forecasts and temperature and precipitation records into profits.

The days of skepticism regarding the reliability of the Weather Bureau are past. If the forecast in the morning paper indicates rain, most of us carry umbrellas and mackintoshes when we leave home. The average citizen's appreciation of the weather service ends here — with its ministration to his personal convenience and comfort. The more important application of the Weather Bureau's work to business is not so well known.

A BUSINESS BUILT ON WEATHER FORECASTS

Study of the weather reports from day to day helped an Iowa man to build up one of the largest wholesale fruit businesses in the Middle West. His method was simple. Most small fruits, and particularly strawberries and raspberries, spoil easily when picked wet. This man shifted his orders so as to avoid buying from sections subjected to recent rains. A result was that he gained a reputation throughout the trade for the excellent quality of his stock.

One day this dealer roused the curiosity of the local weather observer by a telephone inquiry about the weather prospects in the grape belt of western New York which, at that season, supplied a large part of the demand from the territory just west of the Mississippi River.

"Rain," was the answer. "It's going to rain there to-morrow and probably the day after."

A week or two later the observer met the merchant and asked what use he made of the information.

"It was worth to me," replied the fruit man, "about two hundred dollars. You see, grapes can't be picked in wet weather; so I knew if it was going to rain out there, grapes would be scarce here. As soon as I got your answer I ordered a double shipment — two cars instead of one. It rained in New York for three days running, and the price of grapes here rose to a figure that let me sell my shipment at a fine profit. The only mistake I made was in not ordering four cars instead of two."

In his last annual report, the chief of the Weather Bureau asserts that 85 per cent. of the governmental forecasts prove correct, and adds that this is a conservative estimate. The popular reputation of the bureau may rest upon its success in discounting the future, but business owes quite as much to the painstaking, scientific care with which the service collects a complete record of daily weather changes throughout the country — after the changes have taken place. These records have accumulated now for a sufficient number of years to furnish fairly reliable averages, actuarial tables of weather risks, which are bound to increase in accuracy and value as time goes on.

SELLING RAINCOATS IN RAINY SEASONS

Comparatively few industrial concerns thus far have taken advantage of this phase of the Weather Bureau's work; but the Government's meteorologists believe that the time is not far off when its importance will be universally appreciated. One of the first big corporations to recognize its value was the United States Rubber Company, which deals in rubber boots and shoes and waterproof garments and rubber tires. Accountants from the office of this company spent a week recently copying records at the office of the New York Weather Bureau. From these figures, tables have been prepared which show the average temperature and precipitation during the last ten years for every month of the year in the various districts into which the country has been divided by the sales department. By this means the company expects to multiply the efficiency of its forces, conserve the energies of its salesmen, and furnish a timely guide for its local advertising.

Another concern which manufactures raincoats and has agents in every state of the Union has just prepared, from the New York Bureau's rain records, tables which show for its different districts not the amount of precipitation, but the average number of days when rain fell during each month. The theory in this case was that raincoats are worn just as much when it sprinkles as when it pours.

The sales manager of a big hardware firm, whose salesmen cover the continent, has a file of the Government's daily weather reports always at his elbow. If one salesman writes from southern Minnesota that his poor showing for the month was due to unusually rough weather, the sales manager checks up his excuses and perhaps the records point out to the manager something that the salesman overlooked — for example, that his territory has enjoyed a long spell of unusually good growing weather which, a month or two hence, promises an extraordinary demand for certain harvesting tools; or that weather conditions have been hopelessly against him, but so propitious to the salesman of the territory in the adjoining state that he hasn't been able to cover his field. In that case the first salesman gets a telegram to abandon his own territory for a time and to go and help his associate.

WEATHER STATISTICS FOR PRACTICAL USE

The governmental records do not stop at summarizing temperatures and precipitation. They show the mean and the maximum and minimum temperatures for every month and year at a large number of stations scattered throughout the country, the average temperatures at eight o'clock in the morning and at eight o'clock at night, the number of days in each month when the mercury registered below freezing or above ninety degrees Fahrenheit, the monthly percentage of humidity, the monthly average of wind pressure, the maximum and minimum velocities of the wind and its prevailing direction, the number of days each month when it reached a gale of forty miles an hour and the direction at the time of its greatest velocity, the monthly number of thunder storms, the atmospheric pressure, means and extremes, and the sunshine record — the number of hours each month when the sun shone.

All these statistics find practical uses. Take the sunshine record: A housekeeper is filled with indignation by an abnormally heavy gas bill. She compares the charge with that of the preceding month and then, if she is a careful manager who keeps her receipts, with the account of the same month a year ago, and proves to her own satisfaction that she has been over-charged. With these old bills as evidence she goes to the gas company's office to demand an adjustment.

"How is it possible," she inquires, "that we burned six dollars' worth of gas last month, when just a year ago in the same house, with the same number of occupants, our bill was two dollars less?"

Occasionally, of course, the meter is at fault, and the consumer has a just grievance; but generally the company can explain the discrepancy in a way that leaves no ground for dispute. The complaint clerk reaches for his weather records; probably he has had to answer similar complaints many times since the monthly bills were mailed.

"Madam," he answers, "the last month had an unusual number of rainy or cloudy days on which you had to use your lights early. The same month a year ago was favored by an unusual amount of sunshine. According to the Government's figures, last month had only 166 hours of sunshine compared with 250 hours a year ago. That, you see, represents just about the difference in these bills."

Last fall the Weather Bureau was asked to tell the average dates when the ground froze in each part of the country. The request came from one of the largest manufacturers of metal fences in the world. By reference to its records, the bureau was able to furnish this concern with information which served as a basis for its selling campaigns, and through which the company expects to eliminate an immense amount of waste motion.

FORECASTS BY MAIL AND TELEPHONE

To the general public the Weather Bureau is best known through its daily forecasts and weather maps. Nearly 90,000 of these forecasts are mailed every day, and the telephone makes this information available, within an hour from the time of issue, to 5,000,000 persons. This mail and telephone service is distinct from the distribution effected through the press associations and the daily papers. In many rural sections the telephone

companies facilitate the dissemination of this information by connecting, at a stated time every day, all the subscribers on a certain line with a central office, so that all points get the forecast simultaneously. Fifteen thousand farmers receive this daily telephone bulletin in Ohio alone.

Every day four thousand forecast cards and two thousand weather maps go out from the New York City bureau, which is the largest distributing point next to Washington; and this number satisfies barely one tenth of the demand. Two hundred banking, bond, and produce houses in New York City send messengers every morning to bring them the weather maps as soon as they come from the printing machine of the local bureau. In the office of J. P. Morgan & Co. a high-salaried employee devotes most of his time to studying these reports in their relation to the far-reaching interests of that banking firm.

THE UTILITY OF A WEATHER BUREAU

The multitude of humbler services performed by the Weather Bureau in a great city is illustrated by the flood of telephone queries that reach the New York office. Answering these takes all the time of one man; on some days they number seven or eight hundred. Most of them come from persons who have practical uses for the information and need it earlier than it would reach them through the regular channels.

One of the first calls of the day, perhaps, comes from the local plant of the largest yeast company in the country. The manager asks what the temperature will be at eleven o'clock the following morning. The science of meteorology could be put to no severer test; and the efficiency of the Government's experts is demonstrated by the fact that their answers, except on rare occasions, prove correct to within one or two degrees. The information plays an important part in the process of ripening the yeast.

The manager of a restaurant which feeds three thousand persons a day asks for an early forecast before ordering his supplies for the next twenty-four hours. If the prediction is rain or snow he curtails, because inclement weather reduces the daily number of his patrons by from four to five hundred. If a hot spell is coming he doubles his orders for green vegetables and ices and cooling drinks; in expectation of a cold wave he plunges on meats and baked beans and hearty soups.

The head of a concern that operates sixteen haberdashery stores throughout the city telephones for information which enables him to regulate his window displays and his daily advertisements. Obviously, a cold snap must not catch his stores with their show windows full of summer garments, nor must a season of dry, hot weather set in just after he has devoted several hundred dollars' worth of newspaper space to the merits of his raincoats and umbrellas.

THE PROBLEM OF PERISHABLE FRUITS

During the berry season the retail grocer who understands his business studies the weather forecasts with unusual attention. It is a season he dreads. He must handle small fruits to keep the good will of his customers, but his losses from berries that spoil frequently wipe out his profits. Strawberries, in particular, are so perishable that few customers will buy them without a personal inspection. For this reason a rainy day which keeps the housewife indoors generally cuts the strawberry sales in two; and if the dealer has not taken warning from the previous day's forecast and reduced his purchases from the commission house he finds himself with an over-stock which, not infrequently, he is obliged to sell below cost or dump them into his garbage cans.

The average weather expert is full of enthusiasm for his calling — a fact, by the way, which may explain why the Government has been able to get efficient, conscientious service in return for salaries that average only $1,070 a year. He looks forward to the time when the big commercial enterprises will find it profitable to employ their own meteorologists; and already there are signs that this day is at hand. One of the largest forwarding houses in New York recently received permission for two of its employees to spend

several weeks in the office of the local bureau familiarizing themselves with the details of the service.

ROUTING SHIPMENTS BY FORECASTS

The shippers of perishable goods were among the first to appreciate the practical importance of the Weather Bureau. Merchandise may be several days in transit, and the necessity of preparing for weather conditions that may be encountered during a long journey calls for expert knowledge of meteorological geography. The bureau will furnish the records and forecasts, but the shipper must work out each separate problem for himself. It is not the mean temperatures he must guard against, but the extremes. In this he is guided mainly by the data which the bureau has been accumulating for the last twenty or thirty years. He determines the danger points and then consults the special long-distance forecasts which the weather men in his home town will figure out for him. For example, in preparing to send a carload of bananas from New York to Buffalo during the winter, the shipper would ascertain what the lowest temperatures were likely to be in the Pocono Mountains or the Mohawk Valley, depending upon the route chosen. Recently the Department of Agriculture came to the aid of the wholesale fruit dealers and prepared a bulletin that showed the extremes of heat and cold which the various fruits can endure without injury. This report reveals that the banana is by far the most delicate of perishable merchandise, or, at least, of merchandise that is handled in large quantities. Bananas are soon spoiled by exposure to a temperature lower than 58 degrees Fahrenheit, or higher than 65 degrees. Apples, the hardiest fruit of all, resist a temperature several degrees below freezing.

A fair working knowledge of meteorology is a necessary part of the equipment of every large cotton dealer and every grain dealer. Until the Government proved that it could do this work far better than any private concern, however well moneyed, many great houses in New York and Chicago maintained expensive systems of their own, which gave them a tremenduous advantage over smaller rivals. Now, the special service that the Weather Bureau furnishes for the exchanges in New York, Chicago, New Orleans, and other important cotton and grain centres gives the small dealer an equal opportunity, provided he knows how to apply the information.

All legitimate branches of business desire a stable foundation, standard conditions, and a minimized element of chance. Excepting violent political disturbances which presage war, the cotton and grain markets of the world owe their widest fluctuations to beneficent rains and devastating storms. And because, with scarcely an exception, such meteorological phenomena are now accurately foretold, these businesses have acquired a firmer basis and less opportunities for "wild cat" speculation.

HANDLING THE WEATHER "NEWS"

Every market day, an employee of the Weather Bureau is on duty at the principal exchanges of the United States to handle the weather news that comes by direct wire from stations throughout the country. Generally this information is displayed by means of an immense outline map on ground glass which the man from the local bureau covers with figures that indicate the precipitation and the average temperature at each weather station during the twenty-four hours ending at eight o'clock each morning, and the lines of barometric pressure surrounding the storm centres which the weather men call "lows." The progress of these "lows" from the time of their first appearance on the Pacific Coast to their final disappearance in the Atlantic marks the paths of weather changes across the continent, and the average cotton and grain trader soon becomes expert in figuring out these probabilities independently, when necessary, of the official governmental forecasts.

The 4th of March, 1909, brought a snow storm that was memorable not for human suffering nor property loss, but for an unprecedented prostration of wire communication over the territory east of the Mississippi River. President Taft was being inaugurated in Washing-

ton and not a newspaper in the country that elected him was able to get the news. Without doubt it was one of the most dismal inauguration days in the history of the Nation; but nowhere was its gloom darker than in the lofty aeries occupied by the men of the Weather Service. For the bureau had failed to give adequate warning of what, while it lasted, seemed almost a national catastrophe. Yet this mistake proved a piece of good fortune, not only for the bureau, but for thousands of persons who, up to that time, had not appreciated the practical importance of its work. It started a controversy which gave the service plenty of wholesome advertising.

This is how it worked out: Before several million newspaper readers had time to forget the inconvenience of that short gap in the news of the world, a magazine writer took the inauguration day storm as his text and constructed an argument to prove that the Weather Bureau was not giving the people of the United States adequate return for the million and a half they spent every year to maintain it. The article attracted wide attention, and naturally the weather men were disturbed. They knew that it presented a false conclusion based on a trifling percentage of exaggerated failures; so they set about contradicting it with an array of facts and figures.

SAVING MILLIONS THROUGH THE BUREAU

The evidence they collected surprised even the bureau's best friends. All over the country boards of trade adopted laudatory resolutions; farmers and shippers and merchants and engineers and contractors wrote to the papers declaring the value of the service in terms of hard cash. California sent word that by taking advantage of a single cold wave warning the citrus fruit growers of that state had saved $14,000,000. Ship-owners testified that the storm warnings displayed at three hundred points along the sea coast and on the Great Lakes had saved lives and property beyond estimate. Warnings of one hurricane that swept in from the West Indies had detained in port vessels valued with their cargoes at more than $30,000,000, a large percentage of which must surely have been lost if the storm had caught them far from shelter. Flood warnings along the Mississippi in a single season had saved, according to reliable estimates, property worth $10,000,000. But from a purely financial standpoint even these figures seemed insignificant beside the report that came from the produce dealers of New York City. On the basis of statistics compiled by seventy-five leading commission houses, these dealers declared that the weather warnings of the preceding year had saved 5 per cent. of the perishable produce handled in New York City, a saving valued at $20,000,000. If produce dealers throughout the country had given to the weather forecasts the same attention they received in New York, a conservative estimate on this basis valued the services of the bureau to this one industry at $100,000,000.

When the Government's meteorologists recovered from the surprise of this overwhelming vindication they gathered these resolutions and reports and newspaper editorials in a printed pamphlet and sent a copy to the Committee on Agriculture of the House of Representatives, which was preparing to investigate the Weather Bureau in response to what its members conceived to be a popular demand. The investigation never was started, but the Committee on Agriculture a few days later recommended an increase in the annual appropriation for the work of the bureau.

I have recalled this episode to illustrate the popular estimate of the service that prevailed five years ago. Those who contributed to this symposium of praise had considered only the forecasts, or, rather, a small proportion of the forecasts — the "warnings" that signalled danger. Today, the Weather Bureau's chief harvest defies statistics. It comes, not from the prevention of loss by storm and flood and Arctic blasts, but from the efficiency and economy that has resulted from adapting our daily occupations to meet the weather changes as they arise, not at rare and memorable intervals, but day by day. And along these lines the students of meteorology foresee the greatest triumphs of the future.

A HOME AND A CHANCE IN LIFE

HOW ORPHANS ARE NOW "PLACED OUT" IN GOOD FAMILIES TO GROW UP AS NORMAL CHILDREN INSTEAD OF BEING HERDED IN BARRACKS-LIKE INSTITUTIONS — "FATHERS OF HUNDREDS," AND SOME DISTINGUISHED MEN WHO HAVE RISEN TO EMINENCE FROM ADOPTED HOMES

BY

ALDEN FEARING

THE census of 1910 shows that 21,000 orphans or dependent children are cared for by societies and that 40,000 are cared for in private families. In Massachusetts alone at present 10,000 orphans are under some form of state supervision. One authority estimates that more than 90,000 dependent children are in institutions (besides 25,000 delinquents and defectives), and 50,000 more in private homes. How many more there are that ought to be taken care of, no one knows, but even these conservative figures indicate the vastness of the problem.

Shall we continue to house these children in barracks till they become old enough to earn their own living, or is there a better way?

Placing-out is no new thing, but it is only during the last few years that it has become the chief article in the creed of the more advanced and intelligent workers for child welfare. "The homeless child for the childless home" has become their cry, and "supervisory inspection" is the chief principle of their operations.

"Any kind of a home is better than any kind of an institution" is an epigram that contains a grain of truth and two grains of falsehood, for a child is better off in a good institution than in a bad household where he or she may be subjected to cruelty, exploitation, neglect, or worse. The movement of late years has been tending toward the ideal of placing-out under careful and continued supervision.

The direct care of destitute children by American municipalities proved a failure, as a rule, before 1875. In 1858 there were three institutions in Massachusetts with 2,500 inmates, half of whom were children. The State Board of Charities made an investigation in that year, and the report referred to the inmates of these asylums as "a motley collection of broken-backed, lame-legged, sore-eyed, helpless, and infirm human beings." The children were packed like sardines in double cradles and were cared for by pauper inmates or were indentured to incompetent people with no credentials.

That report started something, and the Massachusetts State Board of Charities has been on the reform war path ever since. Thirty years ago the Monson School for Dependent Children was abolished and the size of the State Boys' Reformatory was reduced one half. Since then more than a dozen institutions have been closed, including the two homes of the Boston Children's Aid Society, the home of the Boston Mission, and the Boston Female Asylum. No new orphan asylums have been built within the last few years, and placing-out under state supervision has been generally adopted. As a state, Massachusetts has probably gone further than any other in substituting homes for institutions, and the system of supervision by a State Board of Charities has proved eminently successful. The Board maintains a large corps of agents and visitors and coöperates with the private placing-out societies. In one year the state expended $346,000 for boarding-out; Boston spent $75,000, and private organizations in the state $50,000 more — a total of $471,000.

In the middle of the last century the New York Juvenile Asylum, the New England Home for Little Wanderers, and the New York Foundling Asylum sent children West in carload lots, and gen-

erally lost sight of them. Then children's aid societies were organized in New York, Baltimore, Boston, Brooklyn, Buffalo, and Philadelphia, to conduct this sort of wholesale emigration. The New York society alone sent out about 1,000 children a year from 1854 to 1875. That this method was largely successful was due to the fortunate conditions that awaited the children in a new country rather than to the excellence of the plan.

After 1875, various states took steps toward supervised placing-out. In 1897, Indiana passed a law prohibiting the retention of children between the ages of three and seventeen years for more than ten days in any poorhouse, and a state placing-out agency was established. A similar law was passed in New Jersey in 1899. Many other states have since followed suit, but some still permit the retention of children in county almshouses. New Jersey further adopted a system under a State Board of Children's Guardians by which no state orphanage was maintained, but board was paid to private families. At about the same time the Cincinnati Children's Home and the Cleveland Protestant Orphan Asylum adopted the placing-out system and began to use their buildings only as temporary shelters for the children.

As the idea spread it took on various forms in different parts of the country. Michigan adopted a placing-out system as early as 1873, including the use of state schools. This plan was adopted, with some modifications, by Minnesota, Wisconsin, Rhode Island, Kansas, Colorado, Nebraska, Nevada, Montana, Texas, and South Dakota. Wherever this system has been conscientiously followed it has proved most successful.

In Ohio, Indiana, and Connecticut a county home system has been employed with less success, but Ohio has recently taken steps toward the adoption of the Massachusetts system with some modifications. Under the State Board of Charities, there will be state direction, inspection, and supervision of all child-rescue agencies, orphanages, etc., a placing-out agency, and a registration bureau for all dependent children in the state.

Next to the Massachusetts and Michigan plans, that of New York has proved most desirable and, with recent improvements, bids fair to be the most satisfactory of all. It involves state aid to private institutions. In the placing-out work the societies act as agents for the public authorities, and in such cases are reimbursed from the public funds. California, Maryland, and the District of Columbia have similar systems, and Pennsylvania places out children through its Children's Aid Society.

A HOME FOR $2.25 A WEEK

Placing-out is a term somewhat loosely used to include boarding-out, temporary placement, and placement with a view to adoption. Boarding-out is practised as a regular method of handling orphans in Massachusetts, Pennsylvania, and the District of Columbia, and to some extent in California, New Jersey, and elsewhere. About $2.25 a week is paid by the state authorities or their agents for the board of one child. This is more expensive than the per capita cost of keeping a child in an asylum, but requires no investment in an orphanage plant.

The old way of placing-out was by indenture contract, which made the child practically the peon of the man to whom he was apprenticed. This method, and all limiting contracts, are falling into disuse, the societies having found it more satisfactory to reserve the right to remove a child at discretion, without any formal process whatever.

Placing-out is conducted chiefly by societies specially organized for that purpose, though most orphanages now have their own placing-out departments. The greatest placement agency of all is the National Children's Home Society, which is a federation of thirty-two state societies. This federation finds homes for about 4,000 children every year, and now has 20,000 under its combined guardianship.

The New York Children's Aid Society is perhaps the best example of a placing-out agency operating on a large scale. It was founded in 1852, and the following figures tell the story of its humane work: Homeless children and orphans placed in families in the country, 29,500; older

boys and girls placed in situations in the country at wages, 26,681; runaway children restored to parents, 10,868; persons in poor families assisted to reach friends and rural employment, 49,308; total, 116,357.

Of this number about 87 per cent. remained in the country and made good.

ORPHANS THAT BECAME EMINENT

On August 2, 1859, a company of twenty-six children were taken by this society from the almshouse on Randalls Island and were placed in farm homes in Indiana. Of their careers a fairly complete record was kept, and of these Nos. 12 and 13 are worthy of mention:

John Brady, half-orphan, was deserted by his father at the age of ten years. He was placed with Mr. John Green, of Tipton, Ind., and remained on the farm until 1867, when he left to teach school. In 1870 he entered Yale; he graduated in 1874 and entered Union Theological Seminary. After he was ordained he went to Alaska as a missionary. In 1897 he was appointed governor of Alaska by President McKinley, and was reappointed by President Roosevelt, serving three terms.

Andrew H. Burke, an orphan, was placed, when ten years old, with Mr. W. D. Butler and later transferred to Mr. E. K. Hall, of Noblesville, Ind. In 1863 he joined the Union army as a drummer boy. In 1868 he entered De Pauw University at Greencastle, Ind.; from 1881 to 1884 he was a bank cashier. He went to North Dakota, where he was elected a county treasurer, an office which he held continuously until 1890, when he was elected governor of North Dakota.

The report of the society for 1913 gives an interesting list of other notable men and women who began life as placed-out orphans. The list includes two members of Congress, a justice of the Supreme Court, nine members of legislatures, two mayors of cities, thirty-four bankers, nineteen physicians, two college presidents, twenty-four clergymen, thirty-five lawyers; and many other professions and lines of business are honorably represented. Since the beginning, more than 5,000 wards of this society have entered the Army or Navy. During 1913 the New York Children's Aid Society gathered in from the streets 539 orphans or deserted children and put them in good homes. The statistics of other societies are almost equally interesting, and the reports contain absorbing stories of the children's lives.

The Children's Aid Society of Pennsylvania has made a special effort to save the lives of weak and ill-nourished babies by a system of wet-nursing that utilizes carefully selected certified wet-nurses.

The Boston Children's Aid Society has formed a coöperative alliance with other societies to divide up the state and thus save duplication of effort and make possible more intensive work.

Although placing-out and institutionalism are fundamentally antagonistic, the better orphanages are now maintaining placing-out departments. For example, the Hebrew Sheltering Guardian Society of New York established a boarding-out bureau in 1905. About 300 children were boarded out last year, and more than 1,500 children have been cared for in this way since 1905. Even the great, conservative Roman Catholic St. Vincent de Paul Society has begun to make use of the placing-out system in certain cases.

WHY HOMES MUST BE INSPECTED

Now wherever the placing-out system has failed — and its opponents have a real case against it — the failure is invariably traceable to lack of investigation before placement and to lack of oversight afterward. Unquestionably, this carelessness has led to abuses before which the defects of the orphanages of the last century pale in comparison. Neglect and ignorance on the part of the foster-parents have ruined many a young life. Deliberate exploitation of orphans for immoral purposes and for child labor has been far too common. To guard against such abuses, the most painstaking inspection is imperative. The crux of the whole situation is right here — the great divide between the old way and the new. Two true stories will illustrate these dangers:

A worker in New York told me of the case of a girl of ten or twelve who was placed in a family that was known to be

respectable. A belated inspection revealed that, though there was nothing personally wrong with the foster-parents, they were neglectful and careless of their responsibility and allowed the girl to visit the room of a male boarder — a school teacher. It developed that this man was a moral degenerate. The results, which need not be dwelt upon, would have been quite avoidable under a thorough system of inspection.

At one time a large number of orphans were obtained from various sources by a community of Russian Jews in South Dakota who organized them to perform their agricultural labor. They lived in sod huts with dirt floors and had practically nothing to offer in the way of home life. Following a disclosure of these conditions, the legislature of South Dakota passed an act forbidding the placing-out of children in that state by societies except on giving a bond for $2,000 in every case. Compulsory inspection naturally followed.

SOME OBJECTIONS TO PLACING-OUT

Lack of preliminary examination, too, may result in harm to the community to which unfit children are sent. At the last meeting of the Massachusetts Conference of State Charities, held in Northampton, a serious opposition to the placing-out system developed among rural workers who believe that state wards are an undesirable influence in their communities. Too often the dependent child brings disease or degeneracy into a group of children that previously were morally and physically clean. The experience of some communities in this respect has been most disquieting, and earnest protests against the system have come from teachers, clergymen, and parents.

It has become evident that at least three forms of inspection are necessary: (1) the preliminary study of cases, with physiological and psychological examination; (2) the careful selection of homes, the requirement of satisfactory credentials, and the firm rejection of all requests from homes that are not fully up to standard; (3) continued, frequent, thorough supervision after placing, and the keeping of complete records in every case.

Nearly all the placing-out societies have been delinquent in these respects, but the standard has been raised materially during the last few years, and "adequate supervision" has become the cry of the prophets of the movement. To-day probably three fourths of the societies could show fairly satisfactory systems. State supervision, to standardize and supervise the work of the societies, has proved useful in Indiana, Illinois, and New Jersey.

But the societies are pretty generally reforming themselves. For example: The New York Children's Aid Society maintains a very complete system of supervision. It has resident agents in New York, Delaware, Iowa, Nebraska, Missouri, Kansas, and Texas who visit the children in their respective districts at regular intervals and investigate any complaints, removing the child at once should there be any occasion for it. In addition to this, local committees of citizens keep a general oversight of the children and report at once to the society's agent any case that calls for special attention. Fifteen trained placing and visiting agents are employed by this society, and the cost of this department of its work alone, in 1913, was $44,129.

A NEW PROFESSION FOR WOMEN

Such reforms have, of course, created a demand for trained workers — a demand that thus far is in excess of the supply — especially for college women. Formerly any sort of well intentioned person would do for this sort of work, the superannuated minister and the incapable woman with charitable impulses predominating. The salaries were low in keeping with the capacity of the workers. To-day the demand is for virile, educated, specially trained young men and women, and the salaries are approaching figures large enough to attract people of ability. Training for the work is now given at the New York School of Philanthropy, the Chicago School of Civics and Philanthropy, the Boston School for Social Workers, the Philadelphia School for Children's Workers, and at various summer schools and institutes in Maine, New York, Pennsylvania, Ohio, and Illinois.

The saving grace of after-inspection may be illustrated by a story told me by Dr. William H. Slingerland, now an agent of the Russell Sage Foundation, who for eleven years was superintendent of the Iowa Children's Home Society:

Two little boys, not brothers, were taken into a home in Iowa. One boy was strong and aggressive, the other quiet and studious. They mixed like water and oil, but managed to get along together so long as their foster-father lived and kept them under control. Upon his death the care of these two boys fell upon the not over-strong mother, and life became a burden to her. The two boys quarreled and fought without a truce, and the foster-mother was unable to exert the slightest control over them.

When she was on the verge of a collapse the visiting agent appeared. He diagnosed the situation and prescribed a separation of the two boys. At length the mother consented. The stronger of the boys was taken away to a farm, where he is becoming a good, steady worker. The other, left without bullying, has become a bright student, obedient, and a comfort to the mother. Two boys have been given a chance in life that were on the road to destruction before.

BOARDING A CHILD WITH ITS MOTHER

A kindred line of work deals with the placing-out of half-orphans — homeless mothers with babies. Probably nearly 50 per cent. of dependent children fall into this class. This work, starting in Boston and Philadelphia, was taken up by the New York State Charities Aid Association in 1893. Previously such homeless mothers were compelled to give over to foundling asylums the children for whom they could not adequately provide. This barbarous custom is still continued in some parts of the country. Aside from all other considerations of humanity it was found that this separation of a baby from its mother meant, in about one half of all the cases, the early death of the child. The purpose of the new agency was to enable an unmarried mother, a widow, or a deserted wife to find a situation of domestic service in which she could keep her child. Despite the skepticism with which the plan was received, it has proved successful. In eighteen years, 4,513 mothers were provided for in this way by the association, and were enabled to keep their children with them. At the present time the number of situations secured averages about sixty-six a month, and this branch of the work occupies the entire time of a staff of five persons at a cost of $5,000 a year. In 1913 the Children's Aid Society of Pennsylvania found situations for 316 destitute women with children.

"In the long run," said Rabbi Hirsch, "pensioning mothers is cheaper than building almshouses, jails, and reformatories." Helping them to self-support is better yet.

A FATHER TO HUNDREDS

Down in Houston, Tex., Mr. Judd Mortimer Lewis, a newspaperman, has used the columns of his paper to conduct a child welfare campaign. He has personally placed several hundred homeless children in childless homes, and has been able to exercise great care and discrimination. He says: "I believe most sincerely in the efficacy of individual and unorganized home-finding work. I do not believe in charitable societies gathering up whole carloads of little folks and shipping them south or west to be distributed with as much haste and as little trouble as possible."

Such men as Mr. Lewis are doing a great work on the firing-line, though there is always the difficulty of thorough supervision and the question of the future in case the moving spirit should pass away.

Mr. Charles Page, a wealthy oil producer of Tulsa, Okla., has founded a private asylum of his own and has taken about three hundred homeless children under his personal protection. "Most of the work at present," writes Mr. Page, "is in taking widows with a family and building cottages for them. We have a kindergarten and school for the children, so that the mothers can go out and work all day. If they run out of necessities they are supplied from our store house. We furnish them with free gas, water, milk, butter, and vegetables raised here on the farm,

and canned goods which they help to put up in the fall. For the orphaned children we have a regular home, with foster-mothers and teachers. Our home has been running now for about six years.

"As to the future of these children, some of them will work on my railroad, on the farm, in my machine shop, greenhouses, canning factory, dairy, etc., doing such work as they are adapted to."

Perhaps an even wiser plan is that of Mr. F. M. Smith, of Oakland, Cal., who has arranged to have his wards provided for after his death. He established a home for girls at Oakland in 1902, which cost $400,000, and which carries an endowment of $400,000. After his death the home will be administered by a board of trustees. Its equipment consists of a farm of thirty-two acres, twelve cottages designed for families of eight girls each with a matron, club-house, gymnasium, school, playground, etc. Seventy-two girls live here, on the average, and despite all these luxuries, with good clothes and the best of food, the cost of maintenance is only $276 a year per girl.

Aside from such efforts, many individuals, of course, are coöperating directly with the societies. Hon. Henry G. Davis, for example, contributes regularly to the current expenses of the West Virginia Children's Home Society, and has given altogether $35,000 to this work.

In 1907 a magazine, the *Delineator*, started a child-rescue campaign, under the supervision of Mr. James E. West, now secretary of the Boy Scouts. In three years about two thousand children were placed in homes. The campaign was concluded in December, 1910, and after it was over nearly two hundred more applications for children were received and were turned over to the State Charities Aid Association.

WILL ORPHANAGES DISAPPEAR?

If the placing-out system is extended indefinitely, what will become of the orphan asylums? Some minds run in institutional grooves, and the millions that have been invested in institutions of this character are not to be disregarded.

The story is told of a pious philanthropist who prayed, "O Lord, send us many orphans that we may build a new wing to the asylum."

A former secretary of the Associated Charities of a city in New York told me that he once asked one of the trustees of an orphanage for more children to place in childless homes. "But, man!" exclaimed the trustee, "you won't leave us anything to run the orphanage on." The asylum was receiving a per capita rate from the state and the city, and reducing the number of inmates meant cutting down the income.

A delicate problem is presented here which can be solved only by sympathetic coöperation and by the fostering of common motives of humanity. At any rate, the orphanages are not likely to fall into decay, for even the placing-out advocates admit the value of the institutions in certain cases, and it is not probable that they will prove to be too large for the increasing number of charges that require temporary shelter. At the worst, these costly plants can always be turned into schools for defectives.

Meanwhile, the wave of reform has swept over the orphanages themselves, and such institutions as the Hebrew Sheltering Guardian Society's asylum at Pleasantville, N. Y., the Children's Village of the New York Juvenile Asylum at Dobbs Ferry, N. Y., the New York Orphan Asylum Society's farm at Hastings-on-Hudson, N. Y., the Leake and Watts Orphan Asylum at Yonkers, N. Y., the New York Catholic Protectory at Westchester, N. Y., and its agricultural school at Lincolndale, N. Y., give evidence of the enlightened spirit that now actuates institutional workers.

In many of the institutions the old barracks have given way to the family unit and cottage system which, though not a reproduction of the home, are a great improvement upon the older types of buildings.

There are hopeful evidences that these two worthy factions are gradually drawing closer together toward the ideal of coöperation, and the struggle now is largely for better methods, centralization, standardization, and trained supervision.

GUTZON BORGLUM

A MECHANIC, HORSEMAN, POLITICIAN, AND APOSTLE OF AMERICAN ART

BY

GEORGE MARVIN

"WHATEVER you do after I am gone," said General Sheridan, "don't put me on a horse like that."

From the windows of his house near Scott Circle in Washington the old Civil War veteran used to see every day the bronze effigy of General Scott heading stolidly out of the Mexican War of 1846 down Sixteenth Street toward the White House, astride his Noah's Ark steed. And the soul of a great cavalryman revolted at the idea of riding thus into posterity.

So when, in the course of time, the Washington Art Commission was on the eve of accepting a model for a Sheridan statue of the same tin-soldier type as now commands Scott Circle, Mrs. Sheridan carried out the wishes of her husband in refusing point blank to accept it. Her objection was sufficient to halt plans which had already been dragging along for six or seven years. At this juncture, through the intermediation of President Roosevelt and Mrs. Herbert Wadsworth, both lovers of horses, another sculptor, with a queer name, was introduced to the Sheridans and afterward to the Commission. His original ideas found favor at once. The contract with his predecessor had resulted, after seven years, in only a plaster model. Nine months after this sculptor with the queer name was commissioned to go on with the work, he unveiled his completed equestrian statue in the newly named Sheridan Circle down at the end of Massachusetts Avenue. If "Phil" Sheridan could see that colossal image of himself he would rest content. For he is riding down to posterity on a real horse, his own horse, which brough him from "twenty miles away" to turn defeat into victory at Cedar Creek. The monument is a faithful commemoration of its subject; it is also a particularly characteristic work of the sculptor who made it.

Gutzon Borglum is a real man. Sculpture is one of the ways, the chief way, in which he expresses himself. He put "Phil" Sheridan on a real horse because he himself knows real horses from years of roping, saddling, and riding them in the West. It was as a sculptor of horses that he first became generally known with his stampeded mares now in the main entrance hall of the Metropolitan Museum of Art, in New York City, the fruit of actual experience translated by genius into a permanent form of art. There a herd of wild horses are galloping helter-skelter, their flight directed by the masterful riding of a man who clings, with a beautiful play of muscle, to the back of the leader. Hercules may thus have controlled, in a legendary past, the man-eating mares of Diomedes, as the title of the group suggests; but Mr. Borglum knows that in his own vivid present a Nevada Indian or an Idaho horse thief does just so steer the panic-stricken rush of a clump of mustangs.

When he began to model the Sheridan he had young Captain Philip Sheridan of the Fifth Cavalry, at the same time of life and much the same figure as his father was during the Civil War, come up to his farm at Stamford, Conn., and ride for him. Time after time Captain Sheridan reined back Mr. Borglum's full-blooded Arab model to its haunches at the end of a sharp gallop until the sculptor-horseman's keen eye had caught all the details of suddenly arrested motion. So in place of the automatons other generals dead and gone are riding lifelessly in many a public place, Mr. Borglum has made one general live at the most dramatic moment of his life on the back of a living horse.

Mr. Borglum's other sculptures evidence,

each in its separate but unmistakable way, the same insurgent human spirit with which he upset the convention in equestrian monuments. Tired children and weary beggars come and sit on the stone bench beside his Lincoln in Newark, and that great presence which was often so lonely in life comes now closer to other generations. Lowell, in his "Commemoration Ode," might have written of this statue, as of the martyred President whom it also commemorates,

"How beautiful to see
Once more a shepherd of mankind indeed!"

The Newark Lincoln is monumental, not because it is huge and set up in a high place where you must lift your eyes and crane your neck to see it, but because it is a reverent re-creation of a noble face and figure set down where you see it level-eyed. Mr. Borglum says the greatest compliment he ever heard about it was from Colonel Roosevelt who, after surveying the statue on all sides, suddenly burst out with, "Why, this doesn't look like a monument at all." As in the Sheridan, the subject is above all humanly realized; the same true instinct which in the former case has avoided the movement which is mere violence has here avoided the repose that is lifeless.

Most of Mr. Borglum's work is done at Stamford, Conn., where, on his three-hundred-acre farm, he finds the peace he needs. There, in a big outdoor studio work shop, he fashions beings out of clay into life, and there he worships his household gods. He is a man of many interests. Until recently he has been an active member of the state committee of the Progressive Party, and is always keenly interested in municipal, state, and national politics. A look at any one of his statues shows that there is nothing impassive about his art. In his attitude toward public affairs he is equally alive, believing, as he says, that "the man of position or wealth who remains passive in the public life going on about him is in the same class with the man who feigns sleep with a burglar in the room." And this theory he carries out in wider fields than politics. His public spirit has helped to bring good roads to Fairfield County, and he has organized a company to run motor-busses over three of these smooth macadam highways from Stamford to different points on the New York State line. The same man who translated into a plaster group the tragedy of human perversity and misunderstanding, poetically entitled, "I have piped unto you, and you have not danced" — an intangible truth which each beholder must interpret for himself — the same man who could do that designed the big motor-trucks which run through the woods and by the fields which his artistic success has won and bought. And he is as proud of the roads and trucks as he is of his thoughts in plaster and marble.

A large measure of success has already come to Gutzon Borglum, earned by hard work, through hardship and tribulation and despite his resolute independence of classic tradition. Other rewards await him. He is in charge of the sculptural decoration for the cathedral of St. John the Divine, and is now at work on groups for the New York State building at the San Francisco Exposition and for the interior court of the Hispanic Museum in New York City. The great statue of Francis Parkman, which the Canadians are to put up at Ottawa in memory of their American historian, Mr. Borglum has been asked to build.

Americanism with Mr. Borglum is indeed a kind of religion. He is, himself, an American through and through, born forty-seven years ago of the Danish parents who gave him his Scandinavian name on the border of Idaho and Nevada. The priests in a Catholic boarding school in Kansas discovered his talent and kept him drawing pictures of saints and madonnas until he ran away back to California. Thus already as a boy he had begun to revolt against traditions and dead forms, preferring to learn from living things about him. His Americanism survived three years in the studios of Paris, where he worked his way through doggedly, skeptical of the benefits received and repelled by the looseness of life in the Latin Quarter. Spain gave him more as he dug up old stories of the great explorers, Columbus, Pizarro, Cortez, Magellan, and the rest.

But America did not appreciate him in turn until after his Indian statues and water colors had been discovered in a small shop on Bond Street, London, by the Duchess of Manchester and the lady who was then the Duchess of York but has since become the Queen of England. In 1903 his wild horses galloped away with the gold medal at the St. Louis Exposition and Mr. James Stillman bought them for the Metropolitan Museum. Gutzon Borglum woke up one morning and found himself famous.

ART THAT IS REAL AND AMERICAN

WHY WE SHOULD CREATE OUR OWN ART OUT OF OUR OWN NATIONAL HISTORY INSTEAD OF IMITATING THE WORK THAT PROPERLY EXPRESSED THE TRIUMPHS OF GREECE AND ROME

BY

GUTZON BORGLUM

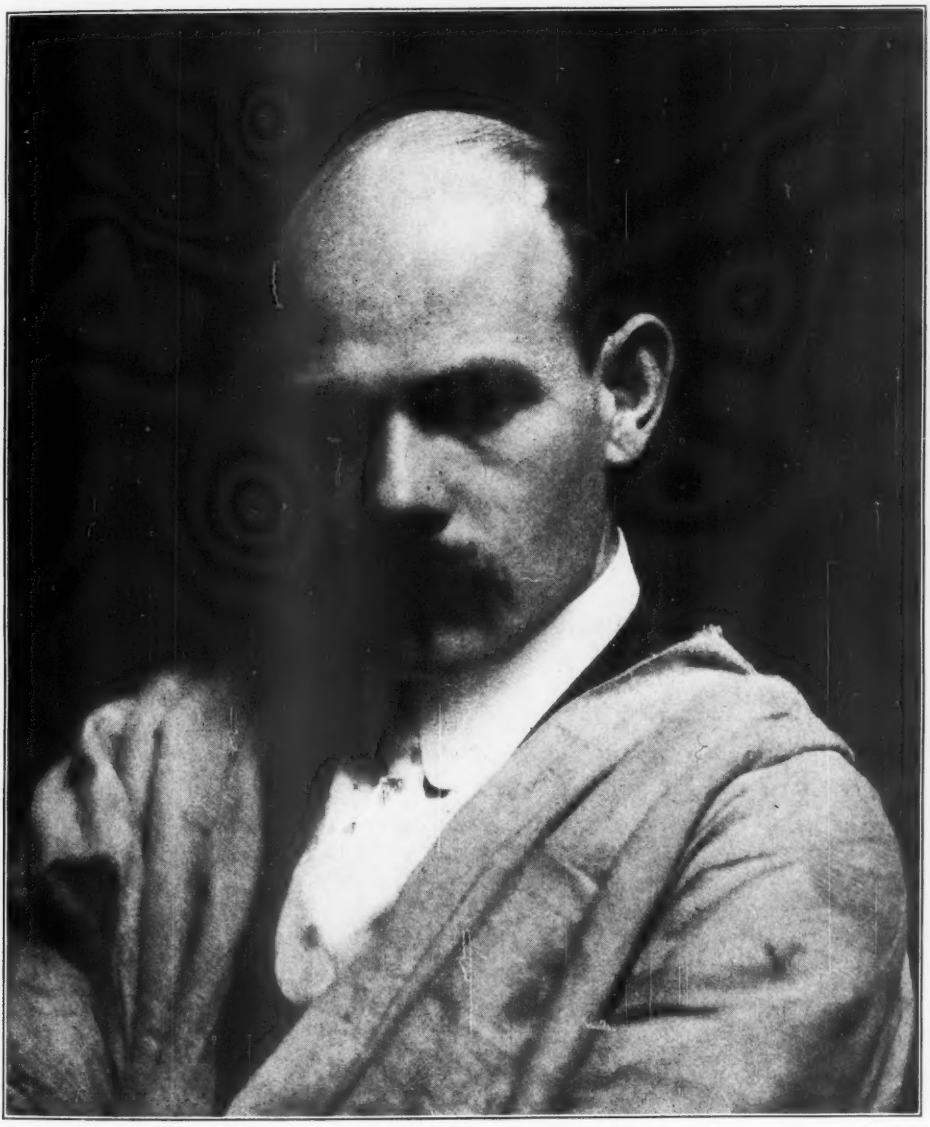
TO DROP a plumb line into the depths of life, to find thereby the great emotions common to all mankind and to express them so that all mankind will understand the expression — this, I think, is what art is for.

More than this, art in America should be American, drawn from American sources, memorializing American achievement.

Opposed to both these fundamental facts stand untold wealth with unknown resources which annually create a market for the established accoutrements of ancestral respectability, seeking ancient evidence of every conceivable sort. Scarcely a tomb of antiquity has not been coveted, searched, or sacked, to meet the rapacity of our dollar kings and queens.

Anything old enough to fall to pieces becomes gilt-edged security to this annual flood of "art lovers." So great has been the need that hardly a respectable home of ancient standing in Europe has not been tempted and levied upon for old personal belongings.

Business men and art students jumped into line and into the manufacture of these counterfeit certificates of respectability. The story is one of the black pages of this New World's growth. It is so filled with make-believe and counterfeit that it may be said this has been the greatest ill that has come to our esthetic life. We are blind, false, and utterly incapable of thinking alone — standing alone — expressing ourselves frankly in matters affecting our personal life, taste, and desires; and in turn are mocked by people who have dumped upon us their second-hand belongings. We are told by the "antiquarians," the Fifth Avenue term for the second-hand, that "we are not artists;" "we haven't a right to think;" "they will think for us." They tell us what kinds of houses we must live in and how to furnish them. Individual tastes, habits of occupant, and such foolish whims are ruthlessly brushed aside. This modern antiquarian has his bias — a bias created by available supply — and he is bent on working that supply off on his client. And he succeeds in spending from ten thousand to a million, involving everything his antique resources contain. I must confess I do not sympathize with the bank accounts which are levied against to build up and keep up this masquerade. I do regret deeply the reaction that success of this sort has upon the young art students, who often innocently fall victims to this lucrative trade of make-believe. We see incoming ships loaded with the second-hand or counterfeit art of the old world. We see great enterprise buried under this levy from Egypt, Greece, and Rome. We see the meaningless garland of the Beaux-Arts strung from cornice to



MR. GUTZON BORGLUM

cornice and many structures in this land tangled with traceries borrowed from other lands. We see our city buildings, our state and national buildings, marked and counterfeited by the symbols of peoples two thousand years dead, and splendid structures built into heroic lines to meet the volume of trade, fretted, ruined by the trinkets and gewgaws plagiarized from the Middle Ages. We see façades appealing for some real symbol of the life and soul of the institution, and in its place a fat, coarse ballet girl with an armful of hay or a lapful of pumpkins, labeled "Ceres," and in another place the same good lady as "Blind Justice" with an apothecary's scale and a Roman sword.

Against this, all that is honest, all that is individual, all that is sincere — revolts. Reverence, yes, the veriest respect for one's common honesty, vague though that may be, breeds rebellion, rebellion

against homes made up with the spoils or counterfeits of some one else's home. There is something in this willingness to dine under a foreigner's coat of arms in an Italian palace in Nebraska, or with heraldic nobility in Rhode Island, that robs one of one's true nobility. There is such confession of incompetence that esthetics, and all the ennobling impulses that beget art, seem gone.

THE MARES OF DIOMEDES

IN THE METROPOLITAN MUSEUM OF ART, NEW YORK. THIS GROUP FIRST WON FOR MR. BORGLUM INTERNATIONAL FAME AND RECOGNITION

My philosophy tells me they have not ceased and I know that Nature loses a generation in debauchery without a murmur and replaces it by an awakened nation. I have quite involuntarily found myself first resisting and then opposing this deluge of counterfeits. And as involuntarily I became an insurgent aware also of the greatness of the step — and of how relentless the counterfeiters would grow against any one who has the effrontery to declare that a sweet, young, American child in all her natural charm and unrestraint is more lovely to look upon than a sleepy-eyed Assyrian or Greek rubbed from some wine cup or jug — or that the tales of Egypt or Crete can be to the builders of the state institutions of Missouri, Wisconsin, or New York superior to their own story.

I hope that this is sufficient to explain what I am really working for and against. I was born in the Golden West, reared in the arms of the Church, deluged with "saints to draw from," and suckled on Italian art: my slates were covered from end to end with portraits of Savonarola, Fra Angelico, and Wild Bill and Sitting Bull; I knew all equally well and admired them about alike; Dante, Angelo, and Petrarch were my intimate friends, with Crow and Sioux raiding all about. Into this was injected the legends of the Danes, poured into my ears by a Danish mother, while a father talked Socrates till the candles went out. I grew into manhood with this variety of ideals and of life from all the corners of the Old and New Worlds. Over it all, goodness and beauty and the emotions seemed to hover. And I remember very distinctly that beauty and form and the making of things all seemed to be a very idle kind of pastime until I

myself formed some definite ideals from my own life, quite apart from my own work, and then the work shaped itself to fulfil that life. And so, out of that has grown an original intensity and ability, at first expressing itself for the purely repertorial art, and then, through pondering and brooding upon the meaning and mystery of it all, it has become definitely a religion.

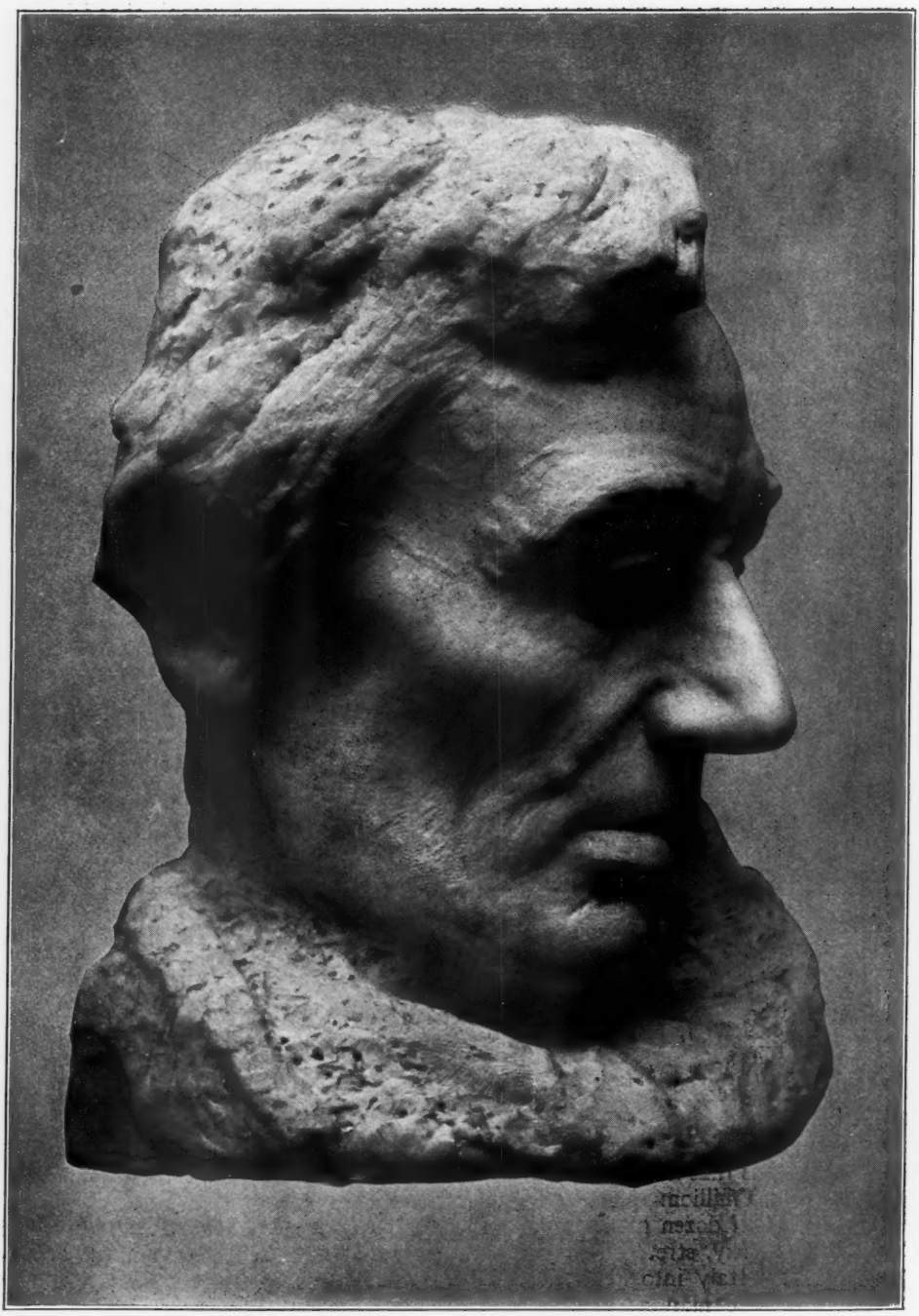
Five hundred years ago these two great continents were quite silent; only the animals and birds and the seasons, bringing their life and sleep, gave action and color. Man, a red, fearful man, with his babes, roamed up and down our great national highways — the rivers and the plains. And the story is that in all our land there were less than a million.

In Italy, a half dozen gods reared their backs into the sky, stretched themselves, heaved a new Italy into history, smiled at heaven, woke man as doctors wake a new-born babe. Galileo said, "We are round." Columbus said, "I'm going West to prove it." Angelo and Leonardo said, "We will re-draw the soul of man." For four hundred years Humanity has followed Columbus. We have built and are building, tearing down and rebuilding; and now, in this hemisphere which he discovered, a score or more republics are strewn from pole to pole, brought into life with all the wonderful travail that accompanies the coming into being of great peoples, each generation born into ideals hardly felt in the awakening. And the epics of Human ity came also on this side of the ocean and grew better and on a wider world-scale. So our land grew, yet Art seemed to be silent about it all, and I have asked and complained not a little of this lack and said we have a great story of our own and we should think and build these great moments into our monuments.

THE MARES OF DIOMEDES

THE CENTRAL IDEA IS THAT OF HUMAN MIND DIRECTING WILD BRUTE PANIC. THE TAMING OF THE MARES OF DIOMEDES WAS THE LAST OF THE SEVEN LABORS OF HERCULES

Monumental art must rank as world work. It must see, form, and in no mistakable terms express the flood of power that surges in the race when it rises to great heights. American artists should be seers and should give, serve, and complete the spirit and concept of Columbus — of Washington — of Lincoln. So Phidias



A HEAD WHICH IS AN INTERPRETATION

THE COLOSSAL HEAD OF LINCOLN PLACED BY AN ACT OF CONGRESS IN THE ROTUNDA OF THE CAPITOL AT WASHINGTON, D. C., CARVED DIRECT INTO MARBLE FROM UNPUBLISHED DATA IN THE SCULPTOR'S POSSESSION.

did with his own day — so did the great Egyptians — so did Angelo. Rodin has not done what Angelo and Phidias did for their repective countries because no statesman of his greatness has lived in his time, and in his Nation's history is missing his great voice. Consider what a team Bismarck and Rodin would have made — that is — think of what would have happened if Bismarck had carried Rodin to Berlin and made him superintendent of public works, with definite power to write the story of Germany's imperial greatness! To France has been lost her opportunity.

The spirit of the hour is world building. The younger hemisphere is just reaching its emotional consciousness. It is on the brink of soul achievement — struggling with another freedom. It will succeed as it has with freedom of conscience, political freedom, and freedom from the stain

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THE LONELINESS OF LINCOLN

AN ORIGINAL CONCEPTION OF THE WAR PRESIDENT AS HE OFTEN SAT ALONE WITH HIS MIGHTY PROBLEM WAITING FOR THE LAST NEWS FROM THE FRONT

of slavery. We rise on a mightier tide. We have won and lost — we have enjoyed success. We have also bled, bled as only the stout-hearted can. We have rebuilt vastly more than has been destroyed — we have fulfilled Columbus's dream and opened the way to the East. Yet, on the side of social service, on the ignorant of their origin, unacquainted with their meaning, and not even sympathetic with the emotions that produced them, bent only upon the paltry respectability that their presence argues.

Washington — Hamilton — set the seal of freedom here, so broad that all mankind is aiding in preserving it.

MR. BORGLUM IN HIS STUDIO

HE BELIEVES THAT A LIVE MAN CANNOT HAVE TOO MANY ACTIVE INTERESTS. PAINTING, POLITICS, FARMING, ROAD-BUILDING, ARE SOME OF HIS

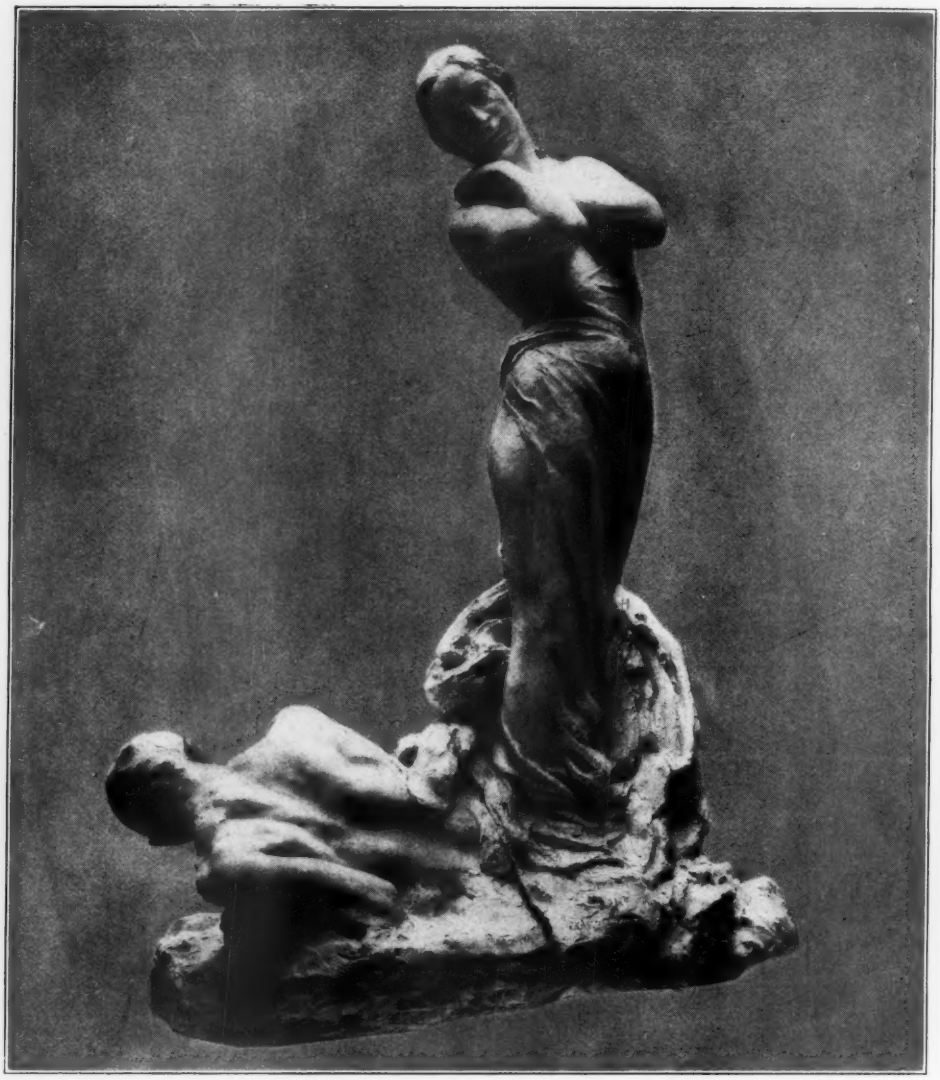
side of the record of our emotional experience, we have not begun to confide our story even to each other, much less to inform the world about it. We have in these four hundred years of colossal youth lived and relived epics, ranking with those of ancient Greece and Rome. And still the story of it all has not been put down and has yet to be written. Those of us who can afford it steal and borrow and beg the arms, the dress, the emotions of Greece and Rome. Too often we hang their rotting trophies upon our walls,

Resolute Lincoln and his fighting aides established an equality absolutely necessary to complete the principles of a great, loving, forward race, and yet we have arrived at the year of grace 1914 with half a century gone since Lincoln became President and not an adequate word has been built into our national buildings to fix properly the history of his great accomplishments. Washington has been edited out of existence and is hardly known as he was to the people. Excepting St. Gaudens's figure called "Puritan" there

"TURN, BOYS! WE'RE GOING BACK"

THE EQUESTRIAN STATUE IN SHERIDAN CIRCLE, WASHINGTON, D. C., WHICH REPRESENTS GENERAL SHERIDAN, AT THE END OF HIS FAMOUS RIDE, REFORMING HIS MEN AFTER THEIR DEFEAT AT CEDAR CREEK

their rotting trophies upon our walls, Gaudens's figure called "Puritan" there



IMAGINATIVE ART

"I HAVE PIPED UNTO YOU, AND YOU HAVE NOT DANCED"

is scarcely a thing in art which gives us an estimate of those heroic men. We have not begun as a people to realize that things we desired honestly — liberty of conscience, freedom from European governments and from the stain of slavery — were things to be proud of; things to sing about; to talk about; to write about; to build around and build into our civic memorials; that they are ours and that they belong to no one else, and that these things and these things alone make us immortal; make us the envy of the world. If we have any art of any kind in song, in letters, in color, in stone or bronze, it should tell about these things; it should write them in bold lines annually across the page of our own history. It should imprint them upon our Federal, state, and city institutions. In fact, these great principles which make us a people should themselves conceive and shape and bring forth the institutions

ART IN PUBLIC SERVICE

ONE OF THE MOTOR BUSSES THAT MR. BORGLUM DESIGNED AND BUILT TO RUN ON ONE OF THE FAIRFIELD COUNTY ROADS THAT HE HELPED A CONNECTICUT TOWNSHIP TO CONSTRUCT

themselves and they should suggest and resuggest the great life that we have begun and are living.

In my recent exhibition at Columbia University (practically the only one I have held in America), I exhibited mainly and almost exclusively what may be called, in the common parlance of the land, "pipe dreams." Among these are the "Mares of Diomedes," a title found long after the group was made. I have utilized a subject from the West — the stealing of horses. The method is, mounting a tractable horse, entering the band, and riding about quietly until the band follows — then leading them away. I stripped the horseman of garments, both to delocalize him and also to show the play of a fine nude figure on a nude horse. The name is a convenience — the motive of the group, mainly intense controlled action. The group, "I have piped unto you, and you

have not danced" (a name given to it by some visitor), represents a great world complaint — the great common lot of all — the grief of unappreciation — a tragedy I early found universal. Little individual effort in life is valued at its proper worth at the hour of its doing — the inaction and apathy of our friends is the greatest drag we have to carry.

My Atlas is a woman because the burden of the world is not borne on the backs of men. It is not a slave's job. Nature has not even allowed man to carry it. It is borne in the arms, in the breasts, of women; and they reach up and receive it — on their knees, crushing them though it does, with a kind of benediction.

My seated Lincoln represents Lincoln as we might see him in his garden alone — as he would appear alone, as he would sit and think and look were he really alone. The placing of the figure at the end of the bench — the whole arrangement of the figure — is to get away from wholly false and artificial attitudes of the conventional commercial monument. The greatest compliment was paid to it by one of my antagonists, "a very prominent New York critic," who said, "It did not look like a monument." Another original

"BORGLAND"

ONE OF THE WOOD ROADS ON MR. BORGLUM'S 240-ACRE ESTATE AT STAMFORD, CONN.

characteristic of it is that it is placed practically on a level with the eye. This shock the art world quickly recovered from and is now adopting.

The Sheridan equestrian in Washington, about which so much has been said, I may add, was deliberately composed to show the irresistible chain-shot character of "Little Phil." He is depicted here assembling his broken army after its defeat, during his absence, at Cedar Creek. He is in the midst of groups of men, scattered and irresolute, ordering them "back to the front."

This statue is also set low and the intimacy that it inspires proves the wisdom of this innovation.

The colossal head of Lincoln, in the rotunda of the capitol at Washington, is a portrait made from observation of the many splendid pictures and the life mask by Volk. It was originally intended simply as a study. In fact I used the huge fragment of stone much as a boy would use a slate. It is a head in scale to a standing figure twenty-eight feet high. The forehead has been cut and re-cut a dozen times; grief, pleasure, anger, surprise, and mixture of these moods were studied — drawn in the stone and in turn cut away. The

A SCULPTOR'S MODEL

MR. BORGLUM RIDING THE THOROUGHBRED ARAB HORSE WHICH HE USES IN MODELING HIS EQUESTRIAN GROUPS

structure of his skull is Greek, the nose was meant to be Roman before it was injured, the cheek bones were not high, though they seem so, his eye sunken; his mouth, when not set in sadness, was responding to his roguish sense of humor.

art; but, like all human experience, if conceived with reverence and sincerity, it may prove beautiful.

These are but a few of the subjects I have produced or have in hand. Any originality of which I am accused is simply

RUSKIN

MODELED AFTER A DRAWING MADE FROM LIFE BY THE SCULPTOR AT WINDERMERE, ON THE ENGLISH LAKES

The heroic figure in marble called "Consciousness of Maternity" represents just what the term implies. It is an effort to represent the consciousness of creation carrying with it all that that prophecy implies: hope, joy in that hope mingled with fear. I know of no other attempt at treatment of the subject in the history of the unconventional in point of view. In making the mother and child — I took that subject up and began at the meaning of it all and so found in it something holy. Every subject admits of this. No matter how common, how Broadwayish, even, it may be, I know if it be dropped into the crucible and all its real aspects analyzed

SMITHSON

THE PROPERTY OF THE SMITHSONIAN INSTITUTION, WASHINGTON, D. C.

as a poet will, some wonderful and quite uncommon point of view shows itself — there is no other trick.

Maeterlinck has somewhere said: "Sculpture should be one of the most exclusive of the arts. It should express certain rare and irreproachably beautiful phases of life, form, and mortal joy or suffering. Every plastic manifestation that fails of this is a species of lasting and inexcusable crime."

These few lines contain the clue for my activity in art and my insistence upon not being diverted from my purpose. Nature in all her primal wantonness is still bringing men into the world as little animals,

and, were it not for Society and the police, we would seek food, shelter, and mate like other little creatures. These three are still our primal impulses, and, to understand ourselves, it helps to begin with these simple roots and to see how necessity, underlying them, gives us labor, trade, and craftsmanship. Under the social hounding we develop the emotions and out of them the whole history of the Fine Arts.

I have not space to pursue scientifically this simple root, with all the cross influences, to its final flowering in a Leonardo. I employ it simply to picture the origin of the seemingly incomprehensible esthetic attainments and to point how natural and obvious the fine arts are and, when of value, how simple and correlated with the simplest forms of our existence.

These explanations occurred to me quite recently on being asked if geniuses were born. My answer was the idea above and that Nature has not taken into account the charms of the Mona Lisa, the majesty of the Parthenon, the power and beauty of the sonatas of Beethoven. Nature is concerned only with the fitting of men to find food and shelter and to mate. With a lineage of health and conserved development of these instincts come men, who take the jargon they are taught to prattle to friend or foe, and under heroic pain or joy melt it into poetic

NERO

AS HE WAS FOUND BY THE ROMAN MOB JUST BEFORE HIS DEATH. THE FIGURE TELLS ITS OWN STORY

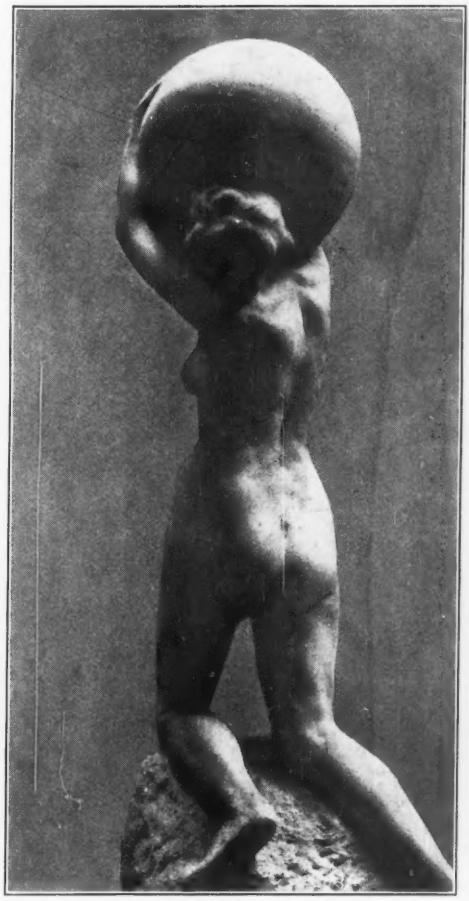
expression. Thus man becomes, perchance, a singer, a poet. He needs only a little more observation, a little more longing, to feel the need to trace the forms he sings about, and scarcely more to add color to those same forms or form to what he colors. The original impulse in this is so primal that few children are without it.

Voice and song are the natural cry of the emotions. An added line or a little color better explains them. It is not a far step to wish to give form to this color. It is inevitable. And so, in simple sequence, feeling and emotion compel song, speech, description; and to sing, to speak, and describe mean in their finality a Beethoven, a Dante, a Shakespeare, an Angelo, or a Phidias. These men were not born with their ability. They had not the remotest idea of making forms or singing songs, and I hold it not difficult to ascribe all their final greatness to a seeing eye, a hearing ear, a finer sensibility. These may develop one man into a genius while a twin brother passes unremembered.

This is written to prove that artists begin with like equipment with other men and that that which counts is simply the degree of finer sensibility and development of the senses. In my own experience I do not remember the time when I was not ambitious to do everything I saw my elders do, and it was not long before I wished to excel. I think this was due simply to my more keen and accurate observation showing me ways to perform the same simple services that came under my boyish observation better than they were performed.

We might go on to explain the origin of the fine art impulses under the head of love, where I place the whole department of esthetic activity — but there is not space to become involved in the hundred influences and cross currents which, after all, lead us to a definition of specific tendencies in different artists and in no way affect the original beginnings from which we all receive our first impulses.

Feeling, which is the emotional consciousness, is back of all significant human endeavor. It is back of imagination, back of unborrowed thought. It is back of Millet, back of the Canal project, back of the Wright brothers, back of the Portsmouth Treaty, and was back of Columbus, back of "The Last Supper" by Da Vinci, back of the first Brooklyn Bridge. It is underneath the present national political upheaval and it can easily be shown to be the best explanation of the life-preserving influences which immortalize some work,

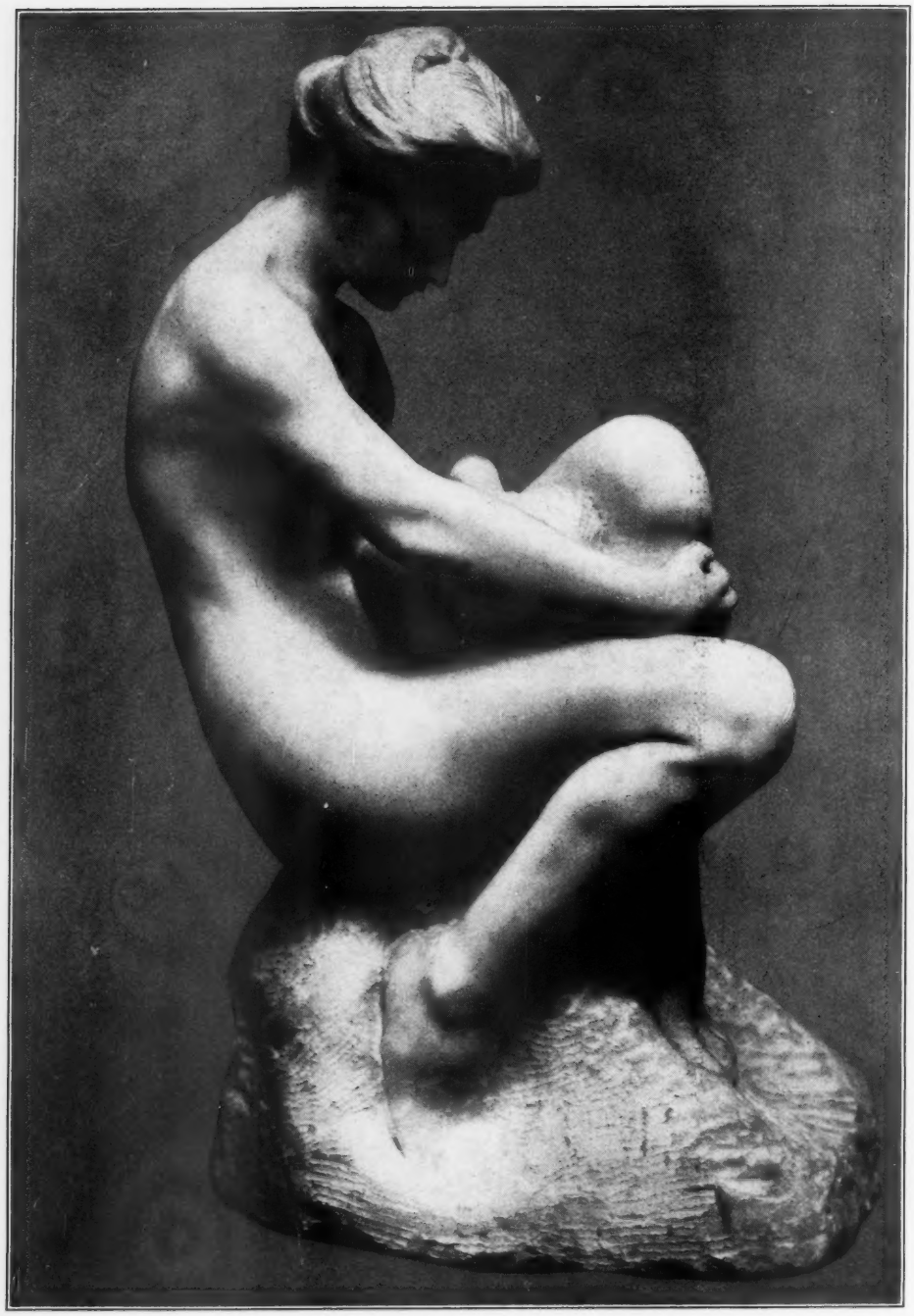


ATLAS

THE BURDEN OF THE WORLD IS BORNE WILLINGLY BY WOMEN

while, without it, the most colossal undertaking hardly receives the common notice of mankind. This philosophy of feeling or awakened emotional consciousness would, I believe, if it were possible to inoculate America with the bacilli, act as a real cure-all to our sophisticated, half-baked, borrowed esthetics.

All primitive peoples possess such feeling or consciousness in relation to their



THE WONDERMENT OF MOTHERHOOD

A REMARKABLE CONTRAST IN TENDERNESS AND DELICACY TO THE STRENGTH AND VIBRANT ACTION OF THE "SHERIDAN" OR THE "MARES OF DIOMEDES"

creative or productive moments with a corresponding reverence for such production, and to this I may here add that there are three qualities necessary and inseparable from the production of a great work of art: sincerity, individuality, and reverence. Heaven demands that work of all kinds shall mean something — be beautiful — shall be the mind's effort to explain the heart — shall be of worth and value, shall be the hour's seal upon the esthetic progress of Humanity.

THE LATEST BUSINESS GOLD-RUSH

HOW MOTION PICTURES HAVE PRODUCED THIRTY NEW AMERICAN MILLIONAIRES IN THE LAST SIX YEARS — A PRODIGIOUS INDUSTRY THAT FRENCH ART AND AMERICAN BUSINESS MANAGEMENT HAVE BUILT UP

BY

HENRY WYSHAM LANIER

"I WAS recently invited by a banker," said a man whose profession has for several years enabled him to study closely the whole motion-picture field, "to be present at a conference between his firm and a foreign 'movie' corporation. It developed that this company was proposing to incorporate its American business separately. They had spent five or six hundred thousand dollars in building up the United States end, and they suggested capitalizing this new branch at three millions — showing in detail from their own experience that they could in their various lines make an annual profit of 60 to 100 per cent. on this figure. I couldn't see anything very far out in their estimates, either — though there are some new elements in the business from now on that are difficult to gauge in advance.

"That may give you some notion of the business aspect of motion pictures to-day."

It is a wonderful story of a vast new industry, this — an industry springing up over night as it were. Little wonder that it has begun to resemble a Klondike rush, and that new companies are popping up on all sides, like mushrooms. The first moving picture machine was Edison's Kinetoscope, shown at the Chicago Fair in 1893; Paul exhibited his improved projector (with the pictures visible to an audience instead of to one person), before the London Royal Institution in 1896; and the Lumière model was shown at the Eden Musée in the same year; even ten years ago the business as a whole was inconsiderable; whereas to-day — well:

(1) The total business of the whole industry last year was more than $300,000,000 — which is said to make it the fourth largest in the United States; and at least thirty brand new millionaires have been added to the roster by it.

(2) There were 5,000,000,000 paid admissions in 1913 to our more than 20,000 moving picture theatres — which show 96,000,000 feet of film each night, and literally speckle the whole country. (Mr. Talbot, in his excellent book, "Moving Pictures," tells of the Hazelton Picture Palace in a Hudson Bay post at the head of the Skeena River in British Columbia, where, in a storage cellar dug in a side-hill, an enterprising showman wears out his old films and his public until fresh supplies arrive — when the river isn't frozen — from Vancouver, a two weeks' journey.) A single motion picture may reach 15 million spectators — more than a company could play to in a "legitimate" production if it toured steadily for twenty years.

(3) American film makers will export this year probably 25,000 miles of pictures; and the royalty paid to Mr. Edison is said to amount to about $10,000 a week.

Beside such really incomprehensible figures, Nome and Ballarat and Kimberley seem like incidents. And the figures for 1912 were less than half those above, so the future has somewhat the bewildering aspect

of the astronomer's staggering picture of the solar system.

Naturally, too, as in anything so vast, the other aspects are even more important than this impressive bigness. For just reflect one moment what an influence in the mental development of this America of ours such shows must be, the more since a large section of this vast public rarely sees any other form of drama — often reads not a book in a twelvemonth.

A FEDERAL JUDGE IN THE "MOVIES"

And when a Federal judge not only permits the Thaw trial to be filmed by a moving picture operator, but poses for the machine in his chambers — we have evidently developed a new force in our society and civilization with which both the present and the future must reckon.

There may be some readers as ignorant as the writer was a short while ago: for their benefit let us note a few salient points in the history of this new toy and force which so absorbs the civilized world at present — for the "cinema," as they call it across the water, has captured Great Britain and the Continent as completely as it has North and South America:

THE FIRST MOVING PICTURES

It must be admitted that the early films were apt to be of the "cheap and nasty" order. At their best, they were "Mammy Washing her Child" or "The Gardener Playing the Hose"; at their worst they were such as to stir up newspapers, clergy, civic societies, and reformers of all sorts to such an extent that a wave of most drastic police regulation and censorship passed over the whole country, covering not only the subjects but the admission of minors, the fire protection, and the sanitary conditions. The motion picture is still branded in a large section of the public mind by this false start. Only within the last three years has its later development begun to redeem its name.

And deservedly. For with the whole world to select from, almost a majority of the first exhibitors specialized on crime and vice and indecency.

All these early films were short, never more than "one reel" of 1,000 feet, generally much shorter. But in 1898 some enterprising promoters, realizing at last that the business needed putting on another plane, made a spectacular production of the "Passion Play" (on the roof of the Grand Central Palace, New York, at a preliminary cost of $16,000) in three reels — an unheard-of experiment, for it took almost an hour to show.

It ran continuously for six months, was sold all over the country, and I believe is still popular. Despite this object lesson, most of the manufacturers kept to the easy and obvious road of supplying cheap melodrama and broad farce, with half a dozen poor actors and wretched scenery, for the innumerable five- and ten-cent theatres.

But about six years ago the moving picture play suddenly broke its cocoon. Paul and Williamson really led the way, in Great Britain; and, through the superior excellence of their studios and the perseverance with which they attacked difficult technical problems of scenery, lighting, and so on, they controlled the American market between 1900 and 1906: Williamson alone supplied nearly a hundred films a week to motion picture theatres in this country.

Still, however, the pictures were conventional, limited in scope.

HOW FRENCH ART CHANGED THE FILMS

Then suddenly French art and dramatic genius saw the chance in this new medium. Great studios were built at tremendous cost, full of most elaborate appliances; scenery equal to that of the finest regular theatres was prepared; the best French actors and actresses and the foremost dramatists were drawn into the productions; and, thus revitalized, the motion picture began to show with amazing swiftness of what it was capable. The French films drove everything else out of our market in the higher class theatres — only to be largely displaced themselves when American makers presently woke up to the magnitude of the opportunity that they were missing.

Some of the things being done to-day along the spectacular line are almost beyond belief at first hearing. For example:

In producing "The Battle of Gettysburg," 2,500 soldiers, regulars and militia, refought bits of that great struggle on the actual battlefield; and in Pickett's charge $3,000 worth of black powder, to supply a realistic pall of smoke, was one of the items of the cost of production.

THE CZAR A "MOVIE" ACTOR

The Russian Government and even the Czar aided in securing historical accuracy for "1812," a presentation of Napoleon's retreat from Moscow. And "Waterloo" was produced in Northamptonshire, at a cost of nearly $25,000, during four twelve-hour days' work, with almost every old military uniform and piece of artillery of the period that England afforded.

"The Boer War" was filmed on the huge Californian ranch acquired by one company just for its productions — with such realism that scores of veterans are said to have pointed out spots they remembered particularly when the pictures were shown in London!

Nor have literature and the drama been neglected. Forbes-Robertson's "Hamlet" has been most elaborately filmed, with an Elsinore Castle built by the water's edge at Lulworth Cove, Dorset, Eng.; "Les Miserables," with a star cast drawn from all the foremost theatres of Paris, is a twelve-reel film (12,000 feet) which took eighteen months to prepare, requires three hours to show, and cost about $90,000; the "Life of Christ" is in thirty-nine epochs, from the Nativity to the Crucifixion, and is reported to have made $150,000 for one renter; "Dante's Inferno" (though advertised on Broadway along "Don't you want to take a trip to hell?" lines) was really a remarkable achievement of the Italian makers; another very artistic production of one of the largest Italian studios is a version of Tasso's "Crusaders," requiring 600 men and 250 horses; even such supposedly caviar literature as "Pelléas and Mélisande" has gone before the motion camera.

SINKING A REAL SHIP

In some respects the most extraordinary of all these book productions is the film of Hauptmann's "Atlantis." The armless man and the actress (who had given the author the first idea of the story on board the vessel which brought him to this country) were found after a long search; an ocean liner, with captain, officers, and crew, was chartered and a company of five hundred actors embarked; the *Roland*, which sinks in the story, was partly constructed on pontoons and sunk by flooding these supports — the scenes of this ocean tragedy being enacted to the utmost detail; and the entire film cost something like $100,000.

Indeed, the new movement in producing successful novels is assuming large proportions, and promises to add materially to the fiction writers' income — for a court decision has just held that the motion picture rights are protected by the book copyright. One company, just starting, is specializing in this line, and offering in many cases $1,000 advance and a straight 10 per cent. royalty on the gross receipts from the film. This is quite a departure, for the authors of moving pictures have generally been paid a lump sum for their work and, though the rate of remuneration has gone steadily up, they have by no means shared in the exceptional successes.

SENSATIONAL ART

The Continent may beat us in the art of its films, but when it comes to realistic sensationalism, Great Britain and the United States lead the world. In bringing out "Ramona," sixty-five actors were sent to the Pacific Coast for five months to get the atmosphere; to show the sacking of the settlement by the Indians, a small village was purchased and actually fired by the savages before the camera. Again a fire scene was wanted; while the possibilities were being debated, a fire broke out in a big store: the producers hurriedly telephoned the authorities, actors were rushed to the spot, and the hero rescued the fainting lady and bore her down the ladder with a background of real conflagration and real firemen that could never be impugned. Miss Marie Pickering, of an English company, in "Through the Clouds," had to leap from an aeroplane, catch the trailing rope of a balloon, and

rescue the helpless victim of the villain from this runaway air-craft — which she did 600 feet above ground; and another actor, as a cowboy on his horse, was slung beneath a balloon and sailed over the city of Berlin. In another play where the "vilyun" in one locomotive is chased by the hero in another, there was a hair-raising race which culminated in the pursuing engine smashing into the one it pursued — but in this the actual collision was a separate run, with dummies, pieced on to the first film.

ACCIDENTS THAT BEFALL THE ACTORS

Naturally there have been casualties: Annette Kellermann was slightly hurt and Herbert Brenon very badly cut in February by the breaking of a glass tank full of water wherein they were enacting "Neptune's Daughter"; one actor was killed in a railroad thriller; another was drowned in a water scene; during the Boer War reproduction one incautious gentleman dropped a lighted match into a glass vessel containing gunpowder — and hasn't eliminated all the particles of glass from his system yet; and besides dozens of cases similar to these, despatches from Africa told recently of the death of a camera man who was filming the charge of a wounded lioness.

These pictures of travel, sport, and adventure in strange lands have been a notable achievement of the "cinema." The "Life in the Jungle" series was a dramatic performance, a regular menagerie of twenty-one lions and pretty much everything else from elephants to monkeys being taken to Florida, with Negroes for Africans, a stock company of thirty actors, animal trainers, and so on. (The heroine had a narrow escape in her "leopard act," being sprung upon so realistically that she was badly clawed.) But such intimate views of a world not one man out of a thousand can ever see as the Rainey views of Africa (on which Mr. Rainey made a small fortune), the Scott and Shackleton sets of the South Pole expeditions, the Duke of the Abruzzi's superb views of the high Himalayas, the set of the unexplored cannibal region of central New Guinea, Buffalo Jones's circus-like ropings of lions and rhinos in South Africa, and the splendid views of swimming polar bears and other Arctic scenes just brought back by the Kleinschmidt expedition, as well as the former Whitney ones — of the absorbing interest and value of these there can be no question. A motion picture outfit has become a necessary part of the explorer's equipment, and the newspapers only recently chronicled the fact that Prince Henry of Prussia had been learning to use a "movie" camera in preparation for the trip of exploration and diplomacy in South America on which he sailed in March.

THE NEWS IN MOTION PICTURES

A similar and even more important field has become the big news events. Mr. Roosevelt, who is news incarnate, was recorded in a myriad manifestations on his trip to Rio, from refereeing a boxing match and settling the question as to the propriety of the tango, to being received in state at the palace in Bahia.

To come to lesser things, the Durbar in India and the coronation of King George were filmed so that the spectator got a much better idea of these gorgeous ceremonies than if he had been on the ground. Pictures of the latter event were shown in Paris that same night. But even this speed record was far eclipsed on the occasion of the investiture of the Prince of Wales at Carnarvon. The ceremony was late in the day so that the last films were not exposed till four in the afternoon: they were rushed on board a special train, developed and prepared in an improvised studio in a goods-car while the train was speeding east; and were actually shown in a London theatre, 200 miles from Carnarvon, that night at quarter past ten. The Messina earthquake and the Balkan War were also chronicled most realistically, several venturesome camera men being overcome by the lava streams on the former occasion; and when a new figure came into the limelight of the Mexican anarchy, an enterprising American company outdid all its rivals by going into partnership with the warrior — so that it is now able to offer triumphantly "General Villa's own Mutual Movies of the Mexican

Revolution." (A realization of the vaudeville joke that "the last Mexican battle will have to be fought over because the moving-picture man forgot to put in any film.")

THE "ANIMATED NEWSPAPER"

A natural outgrowth of these news pictures has been the "animated newspaper," *The Gaumont Graphic*, *Pathé's Weekly*, and a number of others. If there is a shipwreck off the coast, a bad railroad accident, any picturesque disaster, a camera reporter is rushed to the spot; anything worth chronicling in sport, society, politics, fashion — in short, any news that can be so treated is filmed, collected, and made up at the office, and sent out to the theatres as a regular news service. One of these "newspapers" is issued twice a week and each issue is probably seen by several million people.

The business aspect of the motion picture has changed considerably with the sudden increase in cost of studios and accessories, the higher prices paid authors and actors, the exacting public demand for absolute realism at any price. A few years ago, the "plant" represented only a very few thousand dollars; authors who got $35 for a scenario or play were the "best sellers" of the profession; and regular actors would starve rather than make a couple of dollars a day before the camera. Now a producer would be hopelessly handicapped without a studio costing, when completely fitted up, ten to twenty thousand dollars (the Edison building alone is 100 feet long, has a tank for aquatics holding 130,000 gallons of water, and cost $100,000 — a wonderful contrast to the crude little "Black Maria" in which their first films were made), prices of $200 for plays are not rare any more — and the new element of 10 per cent. royalty, especially on novels, is coming in; and Mr. John Bunny, the star actor of the Vitagraph, gets a salary of $15,000 a year for his motion picture work, with enough time left to himself to draw big sums from the vaudeville houses.

But leaving out the extravagant "feature" productions, with the cost of raw film at $2\frac{3}{4}$ cents a foot (instead of $3\frac{1}{2}$ as formerly), it is perhaps a fair approximation to say that the average initial cost is paid by a sale of ten copies of a film (the price here being 10 cents a foot) and that therefore there is a profit of about 4 cents a foot — $40 on a standard reel — to the producer. And since circulations run from 50 to 100 copies (*Pathé's Weekly* has a regular "release" of 120), the possibilities of profit are obvious — though the statement by a well-posted writer that "the American producer cannot possibly court failure" is perhaps not safe to place before a novice thinking of entering the business — for the small independent manufacturer, not belonging to the powerful organizations, will probably be lucky to sell from twelve to twenty prints of a fairly good subject. And when one considers that there are more than 5,000 plays a year being turned out in the United States, exclusive of the big spectacular "features," the similarity to a stampede to new gold fields becomes evident.

TWO GROUPS OF WHOLESALERS

The manufacturers of machines and film are also, of course, reaping a fat harvest. The biggest end is the making of raw film, which is controlled over the whole world by half a dozen firms, that turn out more than a million feet of film a day; 95 per cent. of the world's supply is said to come from the Eastman factories.

When a picture play is made, it passes through a variety of middlemen before it is finally shown to the public. In England, the system is to submit the new film to a "renter," who buys what he believes in and rents it to the theatres. Here, on the contrary, the film "exchanges" dominate the situation — two great groups of wholesalers, the General Film Company, or "Trust," with about fifty branches in the United States and Canada, and the two organizations of "independents" — the Mutual and Universal groups, comprising nearly two hundred corporations all over the country, which are about as much of a "trust" as the General. Each combination issues a given number of films a week, which are distributed to the theatre manager — who has only a negative voice in what he shall put before

his patrons, frequently not even knowing beforehand what he is to receive. Right here is, naturally, one cause of our backwardness in artistic productions.

The latter situation is being relieved by the "features" to some extent, more than one hundred companies now acting independently of trade alliances; and the new "Exhibitors' League" might have a profound influence if they only would.

PLENTY OF COMPETITION

So any reader who sets out to scoop up for himself a few bucketfuls of this golden-flowing Pactolus need not fear but that he will have plenty of competition of the liveliest sort. Moreover, the immediate future promises changes whose effect cannot be estimated: the Edison patents have been upset; the Eastman film patent has been upset in favor of the original Goodwin invention; there is a Government suit for the dissolution of the Motion Picture Patents Company; the "trust" contracts expire this summer (and what will be the realignment no one can foresee); and the tariff has been removed permitting the free entry of foreign films. These unsettling elements, with the growth of the "features" and with new concerns springing up every few minutes, ought to provide plenty of excitement for motion picture men in the next year or so.

Remains the exhibitor, and remarkable as are the get-rich-quick annals of the other lines, some of the money successes here are even more striking.

A MILLIONAIRE POLICEMAN

For example, there was, a few years ago, a policeman in Albany who invested his hard-earned savings so successfully that he found himself a few thousand dollars ahead. He started a moving picture theatre on a small scale — and to-day he is a rich man even for twentieth century America, buying out shares of theatre circuits for millions of dollars.

Another man now a millionaire several times over was a cloth-sponger in a tailor's shop only a few years ago.

A third, who has acquired forty theatres in five years, was a fur manufacturer in a small way; and his former partner heads a concern capitalized at millions and controlling a great chain of 200 theatres.

Mr. Charles Kleine, who was one of the pioneers in the "touring film" (large "feature" plays run exactly on theatrical lines, with advance agents going from town to town, but with only three men to carry around instead of a big expensive company), bought the American rights of "Quo Vadis" from the Roman producers, the Cines Company; it has been an amazing success, and bids fair to return a net profit of half a million dollars to Mr. Kleine in a year's run.

Mr. Tom Moore, of Washington, D. C., started in the early days of motion pictures by purchasing the film of "The Great Train Robbery" for $21 — about all he had. He presently traded the film for a horse and buggy and a cow, sold the animals, and found himself with a capital of $85, on which he leased a theatre: he "bally-hooed" in front, his wife sold tickets, and when the show started he ran the machine — singing songs to Mrs. Moore's piano accompaniment between reels. This Pooh-Bah gentleman has a circuit of fifteen theatres, which he is replacing with much more ambitious ones, the first of the new type costing $225,000.

"MUTE PROFANITY"

Between the severe legal restrictions of a few years ago and the often unintelligent domination of the exchanges, the exhibitor did not exactly have a bed of roses, despite the increasing flood of admission dimes and quarters. Toward the end of 1909 especially, the demand was so much greater than the supply that new films were ground out day and night, and the theatre took what it could get, contending with poor quality, "repeaters," bad editorial work and acting, exasperating service, and tremendous insurance rates. In some states laws were passed requiring the projector to be in an asbestos room, the asbestos being obtainable from only one manufacturer; the doctors said the "flicker" hurt the public's eyes; the Sabbatarians got laws through against Sunday shows; the "unco' guid" actually protested against the "mute profanity" which they declared they detected in the

movements of the actors' lips; licenses were raised in every direction; and the theatre manager was called upon to reconstruct his building according to modern ideas of scientific ventilation. All in all, though some of the early exhibitors have much to answer for, I don't know but that they paid for their success.

The natural result of this chaos was the application of the modern panacea of organization by the formation, first in 1907 of the National, and then in 1911 of the International, League of Exhibitors. If these gentlemen would try to forget their bogey of hostile legislation and the consequent lobbying, they might do much to bring order into the business.

CENSORING A NATION'S AMUSEMENT

One of the great influences in improving the standard of motion picture plays has been an outside one — the supervision of the National Board of Censorship, established in 1909 by the People's Institute to attack some of the crying evils of the New York shows. This board now passes on about ninety-six of every hundred films publicly exhibited in America, supervising the daily amusement of about ten million people. In a single year's work it kept out of the theatres of the United States more than 4 million feet of film, about 1 per cent. of the amount inspected; and the more far-seeing makers are coming to realize that the half a million dollars for which this film could have been sold, or the sixty-thousand it actually cost to produce, is far more profitable in the long run if thrown away than if used.

The outlook for the future in this amazing Jack's beanstalk of a business is suggested by a few of the newest inventions and novel applications:

Word comes that in the general elections in France forty candidates used motion pictures in their campaign. Possibly many political campaign speeches will soon be made by "talking movies."

Our Government is using motion pictures in recruiting work; and some big manufacturers employ them to teach efficiency, to demonstrate salesmanship methods, and for general education of their employees; in the Nevada Hospital for Mental Diseases they have been found of great value in amusing the patients; a "Life Target" now has moving pictures of birds and animals for gunners to practise on; in England humorous advertisements are sometimes run in the theatres, and a new American company devotes itself exclusively to advertising work — one unique result being a department store's screaming announcement of "Motion Pictures of Beautiful Lingerie;" one firm supplies what it calls a moving picture illustrated song service, and an automatic piano company has just put out a "photo-player" for use with motion pictures, containing a whole automatic orchestra of "organ, piano, mandolin, xylophone, violin, drum, cymbal, triangle, castanets, tom-tom, crash-cymbal, fire-gong, steamboat and locomotive whistles, cow-bells, thunder effect, wind siren, bird call, baby cry, telephone and door bell, horse trot, and automobile horn;" and for two years Paris has had a method of showing by full daylight instead of in a darkened hall.

Of course, the logical ultimate aim is the "talking-color-movie." There are already fair color effects: kinemacolor and biocolor, using two screens of red and green; a new method employing the three primary colors; the Continental colored prints stencilled by hand; and the tinted pictures now very common in all work. Edison announced last summer that after five years' study and experimenting, one of his staff had perfected a color process reproducing hues exactly and working as fast as sixteen pictures a second.

And the problem of synchronizing the vocal record with the picture projector has been worked out.

But the voice accompaniment is still too nasal, and there is much to be done before the "talking movie" is adopted for more than, say, political speeches or similar work. Indeed, many leading workers believe it will never be used except to dispense with the titles of pictures — the point being that the photo-play is essentially pantomime, and spoken text is therefore superfluous. Doubtless perfection of the talking machine would change this theory radically.

small way; and his former partner heads which they declared they detected in the

DOCTOR SUCCEEDED NEVERTHELESS

THE WORK OF DR. O. T. LOGAN, A MEDICAL MISSIONARY OF CHANG-TE, CHINA, WHO HEALS THOUSANDS OF NATIVES EVERY YEAR IN A HOSPITAL THAT IS SEVEN DAYS' JOURNEY FROM THE NEAREST CONSULTING PHYSICIAN — HIS ADVENTUROUS CAREER IN WINNING THE GOOD WILL OF THE CHINESE

BY

W. W. PETER

TO THE west of the western edge of a great lake in Hunan Province, China, is Chang-te, a city whose inhabitants have never been numbered. There may be 200,000 people in it as some estimate. Perhaps there are 50,000 or 75,000 less. No one knows. Around this city in the valley of the Yuan River is a huge wall of mud, brick, and stone, higher by ten feet than most of the houses within. This wall was built to protect the people from the spring and summer floods. In low water the river flows past the city. In flood water it flows past and around the city. At such times the city becomes an island, and to a man high up in an aeroplane would resemble nothing so much as a huge washtub full of living creatures resting in a body of muddy water.

To this city in 1899 came Doctor Succeeded Nevertheless, whose other name is O. T. Logan. Originally from Illinois, he came to China to live and work as a medical missionary.

Less than two hundred years ago, when "foreign devils" first came into China, the Chinese tried to restrict contamination to the port cities. Foreigners were prevented from entering the interior, which for years remained a locked up, mysterious country. But gradually the barriers were broken down by commerce, Christianity, and cannon, the three strong arms of Western civilization. Through the central government on the one hand, and each of the eighteen provinces on the other, the entire country was opened to foreigners. But the province of Hunan was the last one to open its doors.

About this time, 1897, Dr. O. T. Logan and his wife arrived at I-chang, Hupeh, where they spent a year studying the language and waiting for a favorable opportunity to go south into Hunan. In those days there were no steamers running so far inland and when they decided to venture into Hunan they had to travel by means of a slow-going houseboat that was propelled by long bamboo poles, heavy sweeps, and wind.

When the party got as far as Shi-Shau, on the border between Hupeh and Hunan, they felt the temper of the people. For centuries the Hunanese had been spared what they came to consider the blight of intercourse with foreigners and they gave way grudgingly to the trend of the times. Although the doors of the province were officially declared open, practically they were still shut in certain cities and only a crack open in others.

The Chinese in this houseboat party advocated turning back. It was plain that foreigners were not wanted. At this rather critical stage in their journey, the doctor succeeded in giving relief to a woman who had been brought to him. While eating her rice she had swallowed a needle. First husband, then relatives, then Chinese doctors, had reached down for the needle and failed. In desperation they took her to the river bank to the boat on which the "foreign devil" doctor had just come to town. Perhaps he could bring up the needle. Word of what had happened to the woman spread through the town and a great crowd of curious people gathered on the shore to see what would happen. In plain sight of all, by the use of his fingers and a long for-

ceps, the doctor succeeded in producing the needle. Their own doctors had plainly failed. And the foreign doctor had just as plainly succeeded. The people were pleased. And the party of foreigners decided that after all they would not turn back.

ON VIEW AS "FOREIGN DEVILS"

When they arrived at Chang-te, their destination, they found the people more curious than hostile. As soon as their boat was tied up next to the shore, hundreds of people came to get their first glimpse of such strange-looking human beings. The doctor went ashore and was followed by people wherever he went. During his absence, the crowd at the boat became so great that the doors were pushed in and the roof was torn away by the more ill-mannered ones who insisted on an immediate personal inspection of the newcomers, their clothes, boxes, etc. The curiosity of the crowd was satisfied in part when the only woman in the party stepped outside so that all could see what a foreign woman looked like. The less timid Chinese women felt of her shoes and clothes, looked her up and down, front and back. It must have been an experience.

They rented a Chinese house in which to live and work. At first their living rooms, the schoolroom, the dispensary and hospital, and the chapel were all in one building. And this a building whose front door opened into the street and whose brick walls held neighbors immediately on the other side. In the back was a small yard to which the annual flood-water came dangerously near. Once the doctor rowed to a neighboring house, also outside the city, and found that in the first floor was six feet of water. In his own house the doctor was annoyed by rats. They were both numerous and daring. He did not mind it much so long as they confined themselves to running around the rooms and over the beds at night. But it was the limit of his patience when, on one occasion while trying to operate on a man who had tried to commit suicide by cutting his throat, he found that a venturesome old rat was walking around on the table he had reserved for his surgical instruments.

Despite crowded quarters and only the simplest of equipments this doctor succeeded nevertheless. A man from another province was brought in because he was blind. The lenses of both eyes were opaque and had to be removed. Seeing, he returned to his home but came back again after five months, bringing with him five friends blind, or nearly so, from different sorts of eye trouble. They had traveled a hundred miles to the hospital, and, headed by the man whose sight had been restored, they walked into the doctor's room, lock-step fashion, every man behind having his hand on the shoulder of the man next in front of him.

He operated on the eyes of an old woman beggar. The day she left the hospital she tried to express her appreciation by the promise to bring all the money she could beg into the hospitals so that other poor blind people might be given back their sight. Poor patients out of gratitude often brought a chicken as a present. And in many cases a single chicken represents several days' wages for hard work.

TIGER'S TEETH FOR MEDICINE

The success of medical missions in China is due on the one hand to the zeal and devotion of the men, and on the other to the great contrast which exists between the Western and the Chinese way of caring for the sick. In China, such sciences as anatomy, physiology, pathology, and bacteriology have never been developed, not because the Chinese are Christian Scientists but largely because they have never sanctioned dissection of the human body. So long as the human body harbored life, it may have been thought ever so little of, but once that body became a cadaver, it became something sacred which had to be left alone and buried with its forebears whenever possible. In consequence, after several thousand years the Chinese system of medicine is still a matter of giving tiger's teeth or something often equally ludicrous, and surgery a matter of letting out the little devils of pain by puncturing the sick patient with long, dirty needles, bleeding, or some such method. From now on, however, this will become decreasingly true. Medical schools are being established along Western lines, dissection

has been legalized in Hupeh by the Government at Peking, and the influence of the Government is leaning very largely toward the new order of things.

In the very beginning of his work, Doctor Succeeded Nevertheless faced a unique difficulty. He wanted to build a hospital. But none of the Chinese builders in the city knew what a foreign hospital building should look like. Could they build him a house? They did not know what a foreign-built house ought to look like, either. There were no foreign buildings in the entire province. But there was one builder who had traveled more than his neighbors, and he remembered having seen a foreigner's house once, and that twelve years previously. Logs from up-country were hauled from the river into the compound, sawed up into lumber by the laborious process of two men and a hand rip-saw, and dressed for use. Everything had to be explained in detail again and again. This took months, but the hospital was finally completed and ready for use in 1902.

DIRECTING AN OPERATION ON ONE'S SELF

Chang-te is in about the same latitude as New Orleans. In summer it is very hot. One summer the doctor became sick and decided that he would have to leave and secure treatment by some other doctor. The nearest one lived four hundred miles away and the going was slow. After four days' traveling on a small boat, the pain became so severe that they had to tie up at a small village on the edge of Tung-ting Lake. In telling the story the doctor says that all he can remember about this place was that next to them was a boatload of squealing pigs. Here they waited, but the pain increased. The doctor decided that an operation was necessary, so he instructed another missionary how to give chloroform and his wife how to perform the operation. Unfortunately, the anesthetist took sick and spilled most of the chloroform so that there was not enough left to put the doctor fully to sleep. The doctor's wife operated anyhow. But the doctor jumped and kicked around so much that he spoiled the operation. Fortunately, the appendiceal abscess, which was the cause of all his trouble, broke into the bowel that very night.

It was at this little village, also, that the wife had to open twenty-one boils which had broken out on the body of their only child. After seven more days, this rather broken down party reached Hankow and a medical missionary there. It was feared that Dr. Logan would not recover. But he did, and when he was well enough to travel they sent him to his home in Illinois. Within a year and a half he was back in Chang-te and on the job as before.

Late in the summer of 1912, Dr. Logan was returning to Chang-te from the annual mission meeting, when the captain of the boat came into the cabin in great alarm with the news that cholera had broken out on the ship and that the first man to be stricken was his first officer. It was a Japanese river steamer, *Siang Kiang Maru*, with three hundred passengers who were already in a state of panic. They were still eight hours from their destination, with no intervening cities at which they might stop. Cholera spreads very rapidly and, once taken with it, the stricken ones die within a few hours.

QUICK WORK IN A CHOLERA SCARE

One glance at the sick man confirmed the captain's diagnosis. The doctor had not come prepared to do the unexpected. But he had a pocket case. From another passenger he borrowed a fountain-pen filler. On board the ship they discovered some rubber tubing and a funnel. From the dining saloon table they obtained salt.

The cholera patient was isolated. Every precaution was taken to prevent others from becoming infected. With the table salt and boiled water a "normal salt solution" was made. The fountain-pen filler was inserted between two ends of rubber tubing to detect air bubbles. Connection was made between the funnel and a hypodermic needle. The saline injection outfit was complete.

By this time the first officer's face was blanched. His fingertips had that "washerwoman's hands" appearance which is characteristic of the last stages of the disease. His heart was fluttering and it was plain that death was not far off.

Carefully but speedily the vein at the elbow was laid bare with a sterilized pock-

etknife. After making sure that there were no air bubbles anywhere, the hypodermic needle was driven into the exposed vein and the solution allowed to flow in at a little above normal body temperature. Several pints of the solution flowed into the man's vein and thus into the general circulation. The officer's heart, from rapid, forceless flutterings, began to beat more slowly and steadily. His blanched features took on a more lifelike appearance. By and by a pulsing thread of flowing blood could be felt at the wrist. The fingertips filled out. The face showed returning color.

Before the operation the man was unconscious. After the injection he showed signs of life by moaning and trying to speak. The first thing he said was, "Give me a drink." On opening his eyes he recognized the captain standing at his side. After two weeks in the Chang-te hospital the officer was taken back to his ship, weak but out of danger.

Scarcely had the doctor unpacked his trunk after his return to Chang-te when there began to come in alarming reports of cholera outbreaks in all parts of the city. Every year there had been sporadic cases of cholera, but no epidemic had visited the city for twelve years. At that time there had been a loss of life which totaled many thousands. The doctor and his wife had lived through that epidemic and now they knew what to do.

The twenty-five men and women who helped him in the hospital were called together. It was a rather silent meeting. As he looked into their faithful but frightened faces the doctor saw those who were the only support of large families. He did not need to tell them what they were facing. They knew. So he made it plain to them that not a single person was bound to stay. Not one left. And they went into the greatest fight of their lives.

Within a week cholera was raging in the city. And it was very plainly to be seen that it would be a physical impossibility to care for all the people once they became sick. Their hope lay in keeping the people from "catching" cholera. It was prevention rather than cure.

Copy was hastily prepared for ten thousand handbills. Before the ink was fairly dry these were being distributed everywhere in the city—on the streets, in the tea shops, and in the public market places. Bills were posted at all the city gates, and on those bulletin boards which so often serve the Chinese as newspapers.

A CHINESE "SANDWICH MAN"

A Chinese version of an American "sandwich man" was rigged up, to the astonishment of the natives. With his loud gong he attracted the attention of many to his signboard. When a crowd gathered he would shout out his warning at the top of his voice for those who were unable to read. At night an illuminated sign was carried through the streets. Two former patients were instructed what to say and then sent out to warn the people. The newspapers were used, also. Within a few days, by the use of all these methods, the news of how to prevent cholera spread pretty generally throughout the city.

And this warning was most simple. Cholera gains entrance into the human body through the digestive tract. Eat and drink nothing contaminated by cholera organisms, and you are free from the danger of cholera. Of course, the people knew nothing about cholera "bugs," but they did know that there was such a thing as cholera. They could understand these rules:

Boil Everything You Eat or You Will Eat Bitterness

Do not eat raw vegetables.
Do not eat anything uncooked.
Do not drink unboiled water.
Before eating, wash your hands in hot water.
No one gets cholera who does not eat unclean food.

Remove Filth

Cholera spreads by means of filth and pollution.
Remove all which has been contaminated by one with cholera.

Gospel Hall Hospital

All who are taken sick with cholera should be carried to the Gospel Hall Hospital for treatment.
During this epidemic only cholera patients will be received.

At the very height of the epidemic occurred Chinese Independence Day. The people were not in a mood for an extensive celebration. But a night parade was

formed to march from one end of the city to the other. In this parade the Chinese authorities gave the Gospel Hall "sandwich man" a prominent place, and handbills were distributed freely.

Thousands obeyed the rules of prevention and lived. Hundreds scoffed at them and died. For the question as to what course to take was left entirely to the judgment of the individual citizen himself. There was no municipal health department to say to the citizen, "This you must do, this you must not do, in order to protect yourself and the community."

At the main hospital entrance was this sign, "Only cholera patients admitted"; and they came, rather they were brought, by the score. At times those who brought them blocked up the street with sedan chairs and improvised stretchers of bamboo poles. They were treated as they came, rich and poor alike. In the democracy of suffering the rich man lay helpless on a table adjoining that of a coolie in rags. When all the available space in the hospital was filled up, the out-patient dispensary room had to be turned into an operating room. Seven operating tables were constructed of rough boards and arranged conveniently in the large room. For every table there was a saline solution stand with holders for the flasks. After being operated upon, only the worst cases could be allowed to remain, and all the others had to be sent back the way they came. In this way the great majority were given the saline treatment, were sent back within a few hours, and their places were given to newcomers.

SIXTY-ONE OPERATIONS A DAY

The very success of the treatments brought new difficulties. What 125-bed hospital in America could accommodate fifty intravenous injections of several pints each in one day for many days in succession without the least warning? And what if this American hospital could not replenish the equipment short of three weeks? And yet, during this epidemic in Chang-te, as many as sixty-one patients were operated upon in one day. Some days the staff worked twenty hours out of the twenty-four. There were no other doctors or nurses within hundreds of miles, and no connecting railroad if there had been.

When the stock of rubber tubing ran short and spoiled from repeated sterilization, the stomach pumps in the hospital were cut up, and all foreigners in the city who had rubber tubing of any sort were asked to contribute. In the hospital there were only two nozzles such as are regularly used for intravenous work. So small glass medicine droppers had to be used instead. Everybody contributed ideas or material.

One of the most serious difficulties was met successfully by one of the menial hospital coolies. Since every patient had to have from one pint to several quarts of distilled water with salt in it, the water could not be distilled fast enough. For two days the staff struggled along with makeshifts while thinking up a plan to build a still for little money without the loss of time. This coolie solved the problem. In one day and at a cost of less than two dollars he built a still which later produced twenty gallons of distilled water every twenty-four hours.

A COOLIE'S WATER STILL

The still was simplicity itself. For cooking food, the Chinese use large, flat, saucerlike pans made of iron. With one of these above and another below, the coolie made a drum of galvanized iron with a hole in the side for a trough. Into the lower pan hot water for boiling was poured. Underneath, a hot fire sent up a constant steam vapor. The upper kettle was kept cool by frequent changings of cold water. The vapor from the lower kettle, condensed on the lower surface of the cool upper kettle, dripped off into the trough, and filled bottle after bottle with distilled water.

While Doctor Succeeded Nevertheless and his staff were working out the salvation of Chang-te, a group of foreign doctors and a still larger Chinese staff were fighting an epidemic of cholera in Shanghai. When the smoke of battle cleared away, or rather when the doctors hung up their operating gowns after the scourge disappeared, it was found that two new world's records had been established in the combating of cholera. The world's record went to the doctors at Shanghai. The

next closest record went to Dr. Logan and his staff, a thousand miles up-river.

A WORLD'S MEDICAL RECORD

In the Chang-te epidemic, 603 patients had been given the "intravenous-injection-with-salt-solution" treatment. The amount of solution carried out of the hospital by these 603 patients was a ton and a half. In a way, this is a world's record, in that never before were so many persons treated intravenously in so short a time and under such difficult circumstances. How many hundreds or thousands were saved by means of the campaign of prevention cannot, of course, be estimated. Not a member of the hospital staff became ill.

霍亂症

夫霍亂之原因種種所致此症多見於中華蓋華人於衛生一道多不講究昧於防其病原當盛夏之時人烟稠密閉街窄巷所積之汚穢等物未經掃除則其內含多種其種後或入於水或由蒼蠅盤踞於穢物之上復飛集於人所食之物種種即由蠅以佈于其面若水未沸物未煮熟而飲食之種遂於胃腸發生其力更生有最毒之質其霍亂症之狀即上吐下瀉手足冷烏皮起縐紋肌筋被惹令其硬抽因此而死者不知凡幾倘人體強健其血能生敵此症之汁則病能自癒今將防染之數法詳列於下

一凡食物菜蔬皆宜煮熟以杜絕其種更宜防蒼蠅來往

一所飲之水必沸至二十分鐘之久方可合用因此時熱度不獨種死而種種亦死矣

一每逢夏季凡水菓及生冷並腐臭等物必須禁食所食者必煮沸始得無礙

一患此症者宜獨居一房往此症痊後或死即此房及房內所有之衣物等件宜以敗毒葯洗之

一患此症者除至親之人及看護者並需生外俱宜藏遠以免傳染其嘔吐之物及尿糞宜埋於土或浸於敗毒葯

（發印局書教浸口漢）

"CHOLERA!"

"BOIL EVERYTHING YOU EAT OR YOU WILL EAT BITTERNESS;" AND OTHER SANITARY DIRECTIONS TO THE NATIVES OF CHANG-TE, CHINA. A POSTER THAT SAVED THOUSANDS OF LIVES

Dr. Logan's friends stick. It has been years now since he made a few friends at Shi-Shau on the border-line between Hupeh and Hunan. But there has not been a year when no one came the long distance from Shi-Shau to Chang-te to the hospital. Of late years the Shi-Shau people have organized parties and brought their sick to the Chang-te hospital in boatloads. And, no matter how crowded the hospital may be, room is always made somehow for these old friends whose encouragement years ago meant so much to him.

There were three stages in the change of attitude of the people. Indifference, polite words which cost the Chinese nothing but meant much to the doctor, and finally money. And the giving of money is final proof of what a Chinese thinks. Last year their voluntary gifts amounted to $300 gold. And it must be remembered that money is ten times as valuable in China as it is in the United States.

A STRANGE VISITOR

One day a visitor from a neighboring province came into the hospital guest room and asked to see the doctor. He was met by one of the Chinese assistants, who asked, "Are you sick?"

"No, I am not sick," the man replied, "and I have never been here before, nor has any member of my family. But I came to see the foreign doctor."

Thinking that he might be but one of the many who were curious to see the foreigners, the assistant said, "The doctor is very busy."

But the man would not be put off, so the doctor was called. After a few minutes of conversation over tea, the visitor came to the point of his visit by saying, "I have here a very insignificant gift which I would be pleased to have you accept." He deposited a bundle on the table and bowed himself out of the room. After the guest had gone, the doctor opened the bundle and was astonished to find that it contained native coins equivalent to $40, gold, which is a very large gift for a Chinese to make to a stranger about whom he has only heard.

During the Revolution of 1911 conditions in the Yangtse Valley were somewhat unsettled. Various foreign governmental officials feared that there might develop an anti-foreign feeling and consequently as a precaution ordered all foreigners from the interior to the port cities. When the foreigners in Chang-te obeyed this request, the Chinese made no effort to delay their

leaving. But they came to urge Dr. Logan to stay on. The officials swore that no harm should come to him. They said they would keep order. And just to let it be known that their intentions were of the best, several bad characters in Chang-te were quietly dealt with.

HEALING THOUSANDS A YEAR

Doctor Succeeded has a man's job. Since medical work was established in 1899 there have been 96,097 registrations of patients. Fifteen years ago patients came only by the dozen. Five years ago they came by the hundreds. But not until the last few years have they been coming in by the thousands. Last year more than 17,000 patients passed through the dispensary and hospital for treatment, and 1,400 operations were performed. And this remarkable piece of work was done in a very modest plant and with only the most necessary hospital equipment for about $3,000. Of this amount, $700 comes from America and $2,300 is given by the patients and subscribing Chinese. An average of fifty-two new patients are received into the hospital every day in the year.

With him the doctor has a foreign trained nurse and two Chinese doctors who share the heaviest responsibilities. The two Chinese doctors were trained for a number of years in the Chang-te hospital before and after completing the five-year course in the Hankow Union Medical School. They are especially skilful in operations on the eye, of which they do a great number. A recent graduate of one of the medical schools of Chicago came out in 1913 and is now studying the difficult language preparatory to active medical work with Dr. Logan. Including dispensary assistants, nurses, and coolies, the total staff numbers twenty-five. With treating, managing, and financing, the doctor has his hands full.

And yet he does a few other things. He spent a month and traveled more than 1,500 miles to attend the last triennial meeting of the China Medical Missionary Association in Peking. Years ago the microscopes of many doctors showed an unknown egg. They got to calling this the "x" egg because no one knew what sort of an intestinal worm it belonged to. After three years of investigation Dr. Logan succeeded in offering an explanation which is now universally conceded — that the "x" egg was the unfertilized egg of the common roundworm. It is probable that he reported the first case of hookworm disease in the Yangtse Valley. Specimens sent to the United States Medical Museum were pronounced by Dr. Stiles to be the American hookworm. His work in parasitology led him into membership in the American Society of Tropical Medicine. He has written for the medical journals of China, England, and America. And all these outside things have to be worked into a schedule which to an ordinary man would be quite full enough.

SEVEN DAYS FROM A COLLEAGUE

Late at night one can often find him alone at work over his microscope in the laboratory or in his crowded study with textbooks and medical journals scattered about. Whether it be getting ready for some difficult operation or some matter for research, he has to rely largely upon himself. His nearest colleague is seven days' journey away. They seldom compete. Nor can they consult over the telephone. Men in his position acquire confidence because they have to fight single-handed.

Hardships? Once he was sent home to die. Ingenuity? Not a month passes but that he has to devise some makeshift where his fellow practitioners on the other side of the earth near the source of supplies have but to telephone an order. Luxury? He knows it in the same way as most medical missionaries whom I have met — by the absence of things they can get along without. Efficiency? Recall the cholera epidemic story.

Whatever happens to come up in the work each day is handled without fuss and feathers. He believes that the job of being an active medical missionary in China at the present time is the very biggest job in all the world that any man could offer him (and he has been offered two professorships). And he says that he is only doing what every other average man of the five hundred members of the China Medical Missionary Association is doing.

THE MARCH OF THE CITIES

"SAFETY FIRST" IN SYRACUSE

ONE pleasant morning last winter a stranger in Syracuse, N. Y., left his hotel for a stroll about the city. He stepped off the curb to cut, as usual, diagonally across the street. Immediately things began to happen: A serious-faced little urchin, rushing up, thrust a card into his hands; two Boy Scouts crossed their staves directly in his path; and a huge voice bellowed at him through a megaphone. The stranger hastily backed up on the curb to collect his startled wits. Slowly it dawned upon him that this must be the tangible manifestation of the famous "Safety First" campaign.

In Syracuse, as in every other large American city, there has always been a heavy list of serious injuries and fatalities from street accidents; and these accidents have been complacently considered unavoidable — the natural hazard of city life. Last fall, however, a particularly flagrant piece of careless driving by a reckless chauffeur resulted in the death of an elderly lady, who was knocked down and killed as she alighted from a trolley car. The indictment and conviction of the driver followed; but the public conscience had been thoroughly aroused, and the city authorities resolved to take the strongest steps to prevent further accidents.

Representatives of the city police department, the Chamber of Commerce, and the local automobile club constituted themselves a committee to undertake the work of prevention; and, with the ready cooperation of the townspeople, immediately started the campaign.

Wide publicity was given the movement by the newspapers in editorial and news columns. Moving picture houses flashed films portraying accidents caused by carelessness. "Safety First" was stencilled on sidewalks, painted on ornamental lights at the street corners, displayed on cards in the street cars and office windows. Fifty thousand booklets were printed and distributed in the churches and schools. Clergymen in their pulpits and teachers from their platforms urged the necessity for caution and clear-headedness. "Safety First" talks were printed on theatre programmes and on restaurant menus. A great rally of citizens was held in the Central High School to ratify the resolutions of the committee.

One particularly busy Saturday the Boy Scouts were detailed to give a practical illustration of the object of the campaign. On this day, from ten in the morning until nightfall, sixty of the scouts patrolled the city. Each boy bore a long staff and a handful of cards on which was printed: "Safety First. Danger! Do Not Cross Here. Go to the Street Intersection. Safety First. Syracuse." Whenever a scout saw a pedestrian crossing the street diagonally, or in the middle of a block, he presented the "jay-walker" with one of the cards. If the person so infringing the traffic regulations paid no heed to the mild hint, the scouts would interpose their staves, while one of the several uniformed "megaphone" men told the transgressor just why it was foolish to violate the principles of the campaign. Needless to say, such publicity was unwelcome and generally effective.

Throughout the campaign the committee emphasized the importance of considering the common rules of safety, pointing out that safety depends more upon the caution of the individual than upon trust in the carefulness of the "other fellow," and that the majority of the street accidents are due as much to recklessness on the part of the pedestrian as to the wanton heedlessness of motormen, chauffeurs, and drivers.

Although the active campaign lasted but a month the signs on the sidewalks and at the street corners have been allowed to remain as a constant reminder of the necessity for caution in moving about a busy city; and though all the results of the campaign cannot yet be estimated, the comparative figures for one month in two successive years show a decrease in accidents of more than 20 per cent. since the agitation of "Safety First."

MAN AND HIS MACHINES

GIGANTIC APPARATUS FOR UNLOADING ORE BOATS

THERE probably are no other ports where the specialization of cargo-handling apparatus has been developed to an efficiency which compares with that of the ore ports of the Great Lakes. It is quite customary to load the largest ore freighters in less than one hour, and the record of one of the great ore docks at Duluth is 6,000 tons in 25 minutes.

The unloading is, of course, a more tedious task, but ore vessels of the size of the *Zenith City*, which is shown in one of the illustrations, and which has a cargo capacity of about 6,000 tons, can be unloaded in a little less than five hours by a battery of four 17-ton unloaders of the type used on the new iron ore docks of the Pennsylvania Railroad at Cleveland, O.

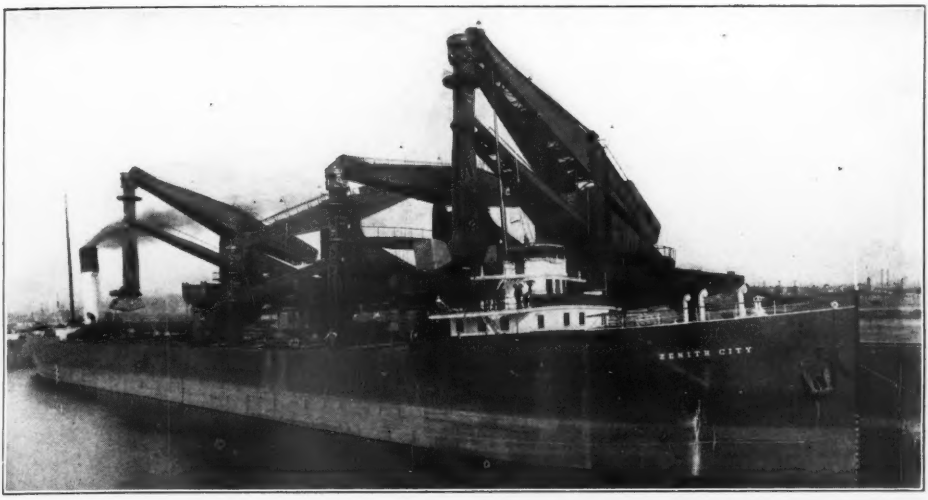
These unloaders, the massive dimensions of which are clearly shown in one of the illustrations, are used for loading into cars for direct shipment, or transferring to a pit at the rear and within easy reach of a re-handling bridge. Some idea of their proportions may be obtained by noting the comparative size of the man whose head protrudes from the round opening above the clam-shell bucket.

These unloaders are massive machines in every way, dwarfing almost to insignificance the big vessels that they operate upon. They consist of a heavy framework mounted on wheels, which travel along the runway rails next to the face of the dock. The main framework spans several tracks on which the cars to be loaded with ore are placed. The upper part of the main frame is provided with rails upon which a trolley travels forward and back. This trolley carries a walking beam, from the outer end of which is suspended a vertical stiff leg with the bucket at its lower end. This bucket leg is mounted on a pivot which is carried on the trolley. The forward end of the walking beam with the bucket leg attached is heavier than the rear portion, so that the bucket will descend by gravity. The walking beam is operated by an electric motor, located at its rear end, and the length of the walking beam and leg is such that the ore can be reached in any part of the boats.

The bucket at the bottom of the leg has a capacity of 17 tons of ore and is directly controlled by an operator who travels with the bucket in a small cab located in the bottom of the leg, directly over the bucket. The leg is suspended from the walking beam on a swivel bearing, which enables it to rotate in a complete circle. From his position in the bucket leg, the operator controls the motions of raising and lowering the bucket, rotating the bucket leg, opening and closing the bucket, and moving the trolley which carries the walking beam forward and back. After the bucket fills itself in the hold and is lifted out of the hatch the trolley is moved back until the bucket is in a position to discharge its contents into a 70-ton ore hopper supported on the main framework of the machine. This hopper discharges the ore into a scale larry which travels on tracks suspended from the under side of the main framework. The larry is controlled by an independent operator who travels with it.

The larry bin has a capacity of 50 tons of ore and is carried on scales which have a recording beam in the operator's cab. After loading the scale larry from the 70-ton bin, the larry operator records the weight of his load, moves the larry over a track upon which ore cars are standing, and discharges into the car any predetermined amount of ore up to the capacity of the larry, the gates in the bottom of the larry bin being arranged to cut off the flow after any desired amount has been discharged.

The speed at which one of these machines works is remarkable. The round trip of the bucket, from the ore hopper to the hold and back again with 17 tons of ore, can be made in from 50 to 60 seconds.



GIGANTIC CRANES THAT UNLOAD SHIPS

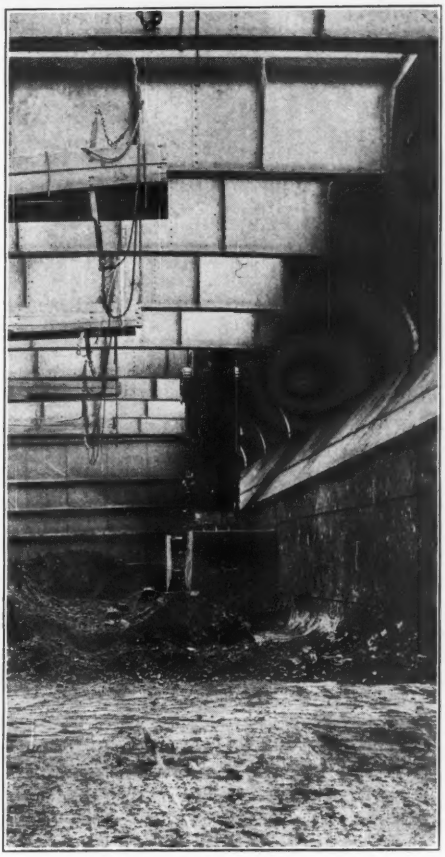
CLEARING A CARGO OF IRON ORE OUT OF A VESSEL OF 6,000 TONS AT DULUTH, MINN.

SOME MACHINERY OF WAR

WIRELESS telegraphy has been developed to a high degree of perfection in military operations. The illustration at the top of the next page shows part of a field outfit in use in army manœuvres. This outfit, which is carried in a transport wagon, consists of a high-powered generator that is operated by a gasolene motor; collapsible masts that can be quickly erected to carry the antennæ; and the sending and receiving instruments. Such a station has a range of many miles, is easy to transport, and carries messages independent of wires that might be cut by the enemy.

Notwithstanding its lack of this last named advantage, the regular telegraph continues to be a valuable aid to communication in war. Its convenience consists chiefly in the simplicity of the apparatus, which, excepting the wire, can be carried by hand. It is also less subject to unfavorable weather conditions and it is free from the "interference" that sometimes makes wireless useless.

The scenes on the battleship *New York*, that are shown on another page, may remind the reader that war vessels are almost altogether great and delicately adjusted pieces of machinery. This machinery is,



ONE OF THE SCOOPS AT WORK

IT IS OPERATED BY THE MAN WHOSE HEAD AND SHOULDERS SHOW AT THE LEFT OF THE SUSTAINING LEG. IT TAKES UP SEVENTEEN TONS OF IRON ORE AT A TIME AND DELIVERS IT ON THE WHARF

WIRELESS IN THE FIELD

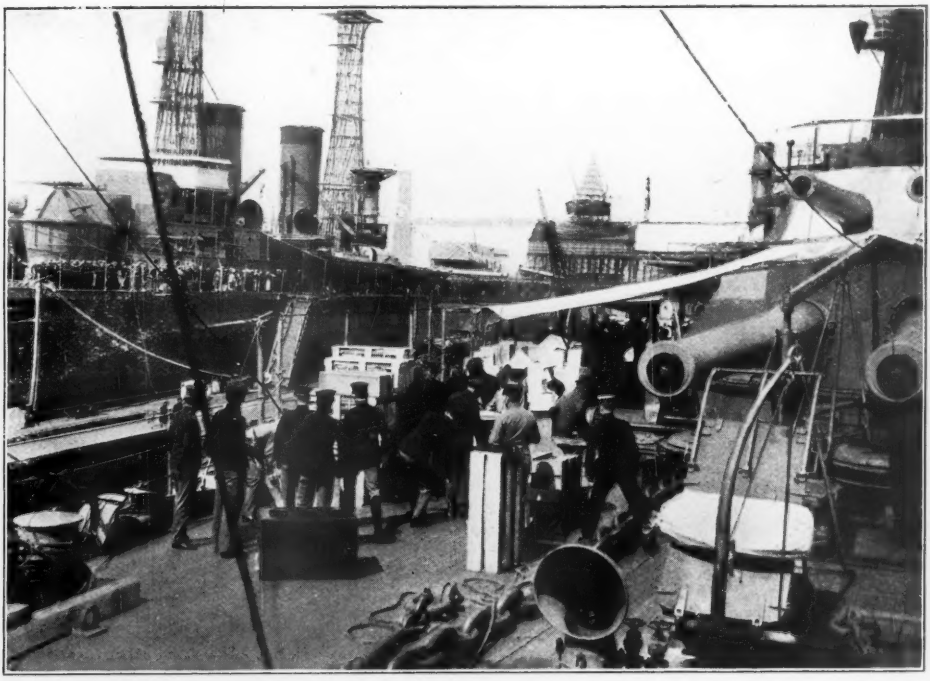
AN INSTRUMENT THAT FREES ARMIES FROM THE DANGER OF INTERRUPTED COMMUNICATIONS

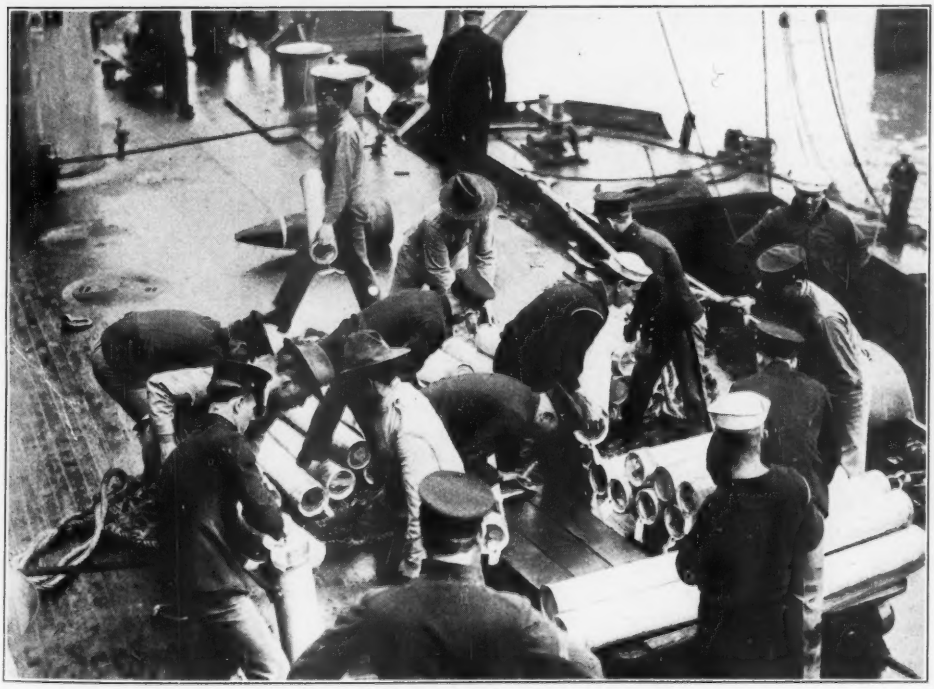
A MILITARY TELEGRAPH STATION

DESPITE THE DEVELOPMENT OF WIRELESS, THE REGULAR TELEGRAPH HAS VALUABLE USES IN WAR

of course, all highly specialized for a particular use. These pictures show the loading of supplies preparatory to the sailing for Vera Cruz. In the second photograph appears a net that is one of the most effective of safe loading devices. Dozens of heavy, highly explosive shells are loaded loosely into these cordage nets and are hoisted aboard. When the pull of their weight is released, the net opens out flat as in the picture.

The extraordinarily light machine gun shown on page 236 has recently been adopted by the United States Army. It is so light (weight 35 pounds) that one man can carry it, yet it is one of the deadliest of modern weapons. It can be assembled complete for action in 10 seconds, and it shoots from 200 to 500 steel bullets a minute. The operation is simple: one man feeds the cartridges into the gun in strips of 25 cartridges apiece and another man aims it. For firing at great distances, a man equipped with field glasses gets





THE COMPLEX MECHANISM OF WAR

A BATTLESHIP ITSELF IS A HIGHLY SPECIALIZED AND DELICATE AGGREGATION OF MACHINERY. SOME OF ITS COMPONENT MECHANICAL PARTS APPEAR IN THESE PHOTOGRAPHS OF THE LOADING OF PROVISIONS (UPPER PICTURE) AND AMMUNITION (LOWER PICTURE) UPON THE "NEW YORK," WHEN IT WAS GETTING READY TO SAIL FROM THE BROOKLYN NAVY YARD FOR VERA CRUZ

the range for the man behind the gun. The photograph shows the gun in practice in the camp of the Ninth Infantry of the United States Army at Laredo, Tex.

Another weapon recently adopted by the Government is illustrated in the upper picture on page 237. This field gun throws a light shell six miles. This shell is only about three inches in diameter and one foot long, and weighs only fifteen pounds, but it contains 300 steel bullets that fly in all directions when the shell bursts.

The Balkan War demonstrated again the usefulness of searchlights for night operations in war on land, not only to light the way for an attack but, for defensive purposes, to blind an attacking force and to discover an enemy. These searchlights, like the one that is illustrated on page 237, are mounted on wagons and so have all the mobility of field artillery.

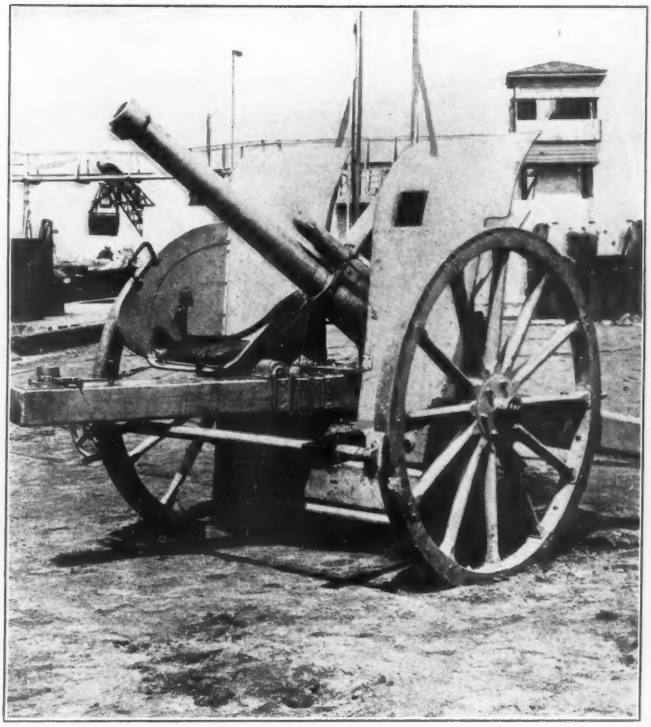
The American naval demonstration at Vera Cruz, Mexico, confirmed the experience of the Italian Army in Tripolitania, that the aeroplane is an invaluable aid for scout work. Naval aviators flew inland fifteen or twenty miles and reported the presence of small bodies of troops and the exact condition of the railroad tracks and bridges on the line to Mexico City. The bomb-carrying device that is illustrated on page 238 is attached to the frame of a biplane below the extra seat that is beside the pilot, so that the passenger-scout can operate it and so that the bombs and the range finder may hang clear of all obstructions. The bombs are released separately or simultaneously by dropping one side of the supporting canvas bands, and they assume a vertical position at once because the nose is weighted. Their flight downward is directed by the revolving vane.

BUILT TO KILL A REGIMENT IN THREE MINUTES

A MACHINE GUN, RECENTLY ADOPTED BY THE UNITED STATES ARMY, THAT TWO MEN CAN CARRY AND THAT CAN SHOOT 500 BULLETS A MINUTE

The menace of the aeroplanes has inspired military inventors to devise protective machines to combat them. A "land going aeroplane-destroyer" of German construction, illustrated on page 239, is armored against the fire of a hostile air-craft and is equipped with high-powered guns that are designed especially to be elevated to the angles necessary for shooting at objects overhead.

Despite the development of the aeroplane and the unfortunate experiences of Germany with dirigible balloons, these larger air-craft still find favor in Continental armies and their manufacture for use in war goes on. They have, of course, a far greater

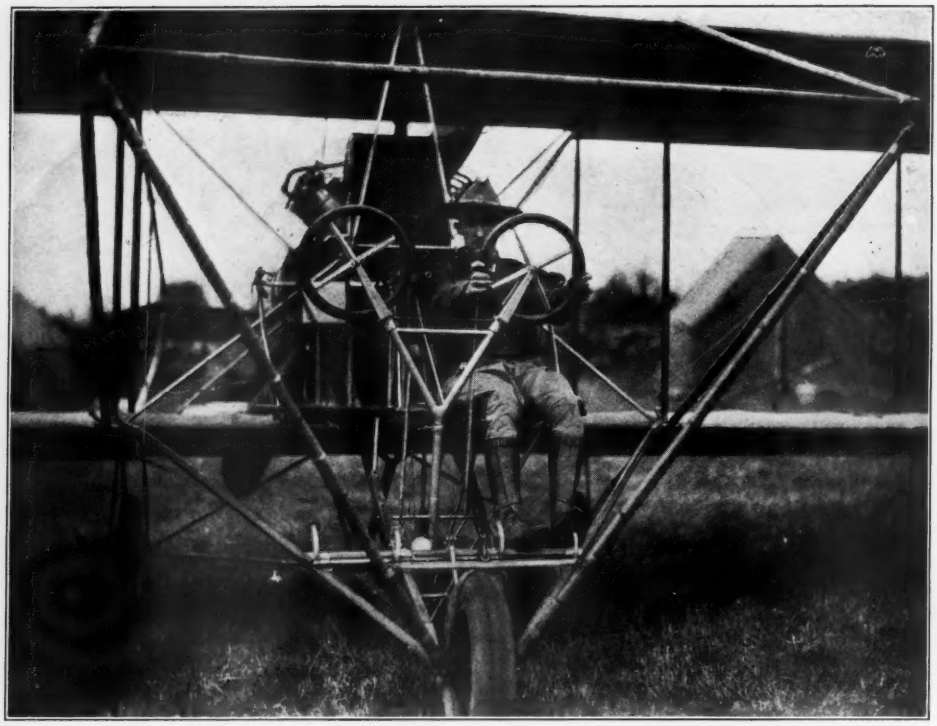


A FIELD GUN THAT SHOOTS SIX MILES

ITS SMALL SHELLS WEIGH ONLY FIFTEEN POUNDS APIECE

FOR WARFARE BY ELECTRIC LIGHT

A FIELD SEARCHLIGHT THAT WAS RECENTLY USED IN THE MANŒUVRES OF THE AUSTRIAN ARMY

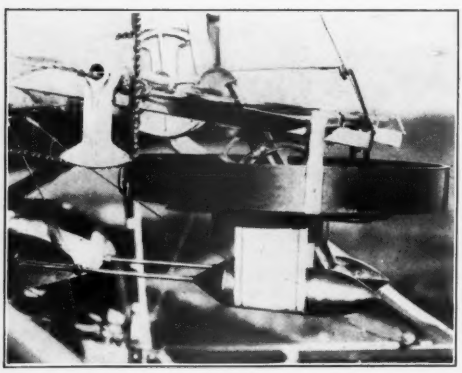


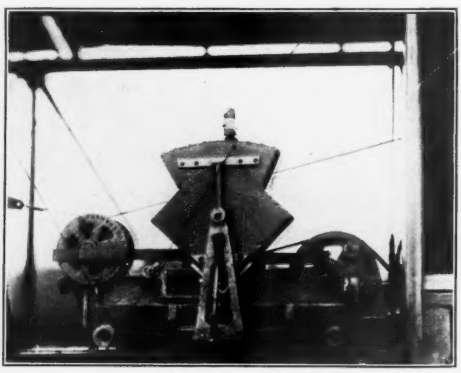
A SCOUT THAT FLIES

AN ARMY AEROPLANE AND PILOT. AIR SCOUTS WERE USED FROM THE BEGINNING OF THE AMERICAN OPERATIONS AT VERA CRUZ

cruising radius than an aeroplane, and can carry heavier guns, more ammunition, and more men. The picture on page 239 gives a near view of the engine-room, propellers, and steering gear — which looks like a biplane — of a French dirigible.

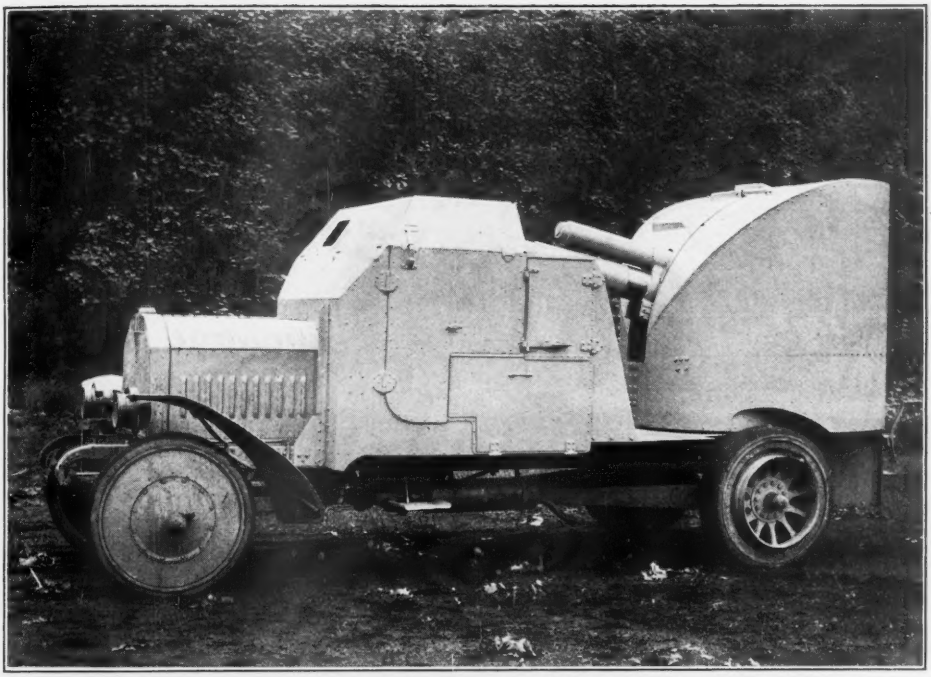
The Army mule will probably never be supplanted for such work in rough country

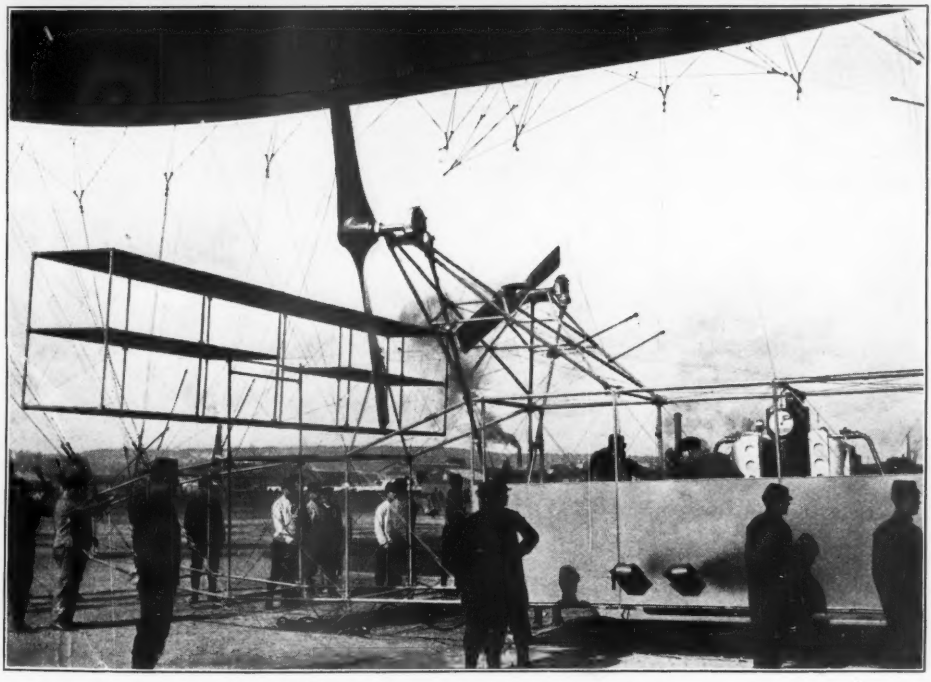




ACCESSORIES OF THE ARMY AEROPLANES

LEFT: SELF-RIGHTING BOMBS AND A TELESCOPE FOR THE USE OF THE AERIAL "GUNNER" BOTH IN TIMING THE DROPPING OF THE BOMBS AND IN MAKING OBSERVATIONS OF AN ENEMY'S FORTIFICATIONS. RIGHT: AN AUTOMATIC STABILIZING DEVICE. BOTH PHOTOGRAPHS ARE FROM THE ARMY SCHOOL OF AVIATION AT COLLEGE PARK, MD., AT WHICH THE AIR PILOTS OF THE REGULAR ARMY ARE TRAINED





MACHINERY OF AERIAL WARFARE

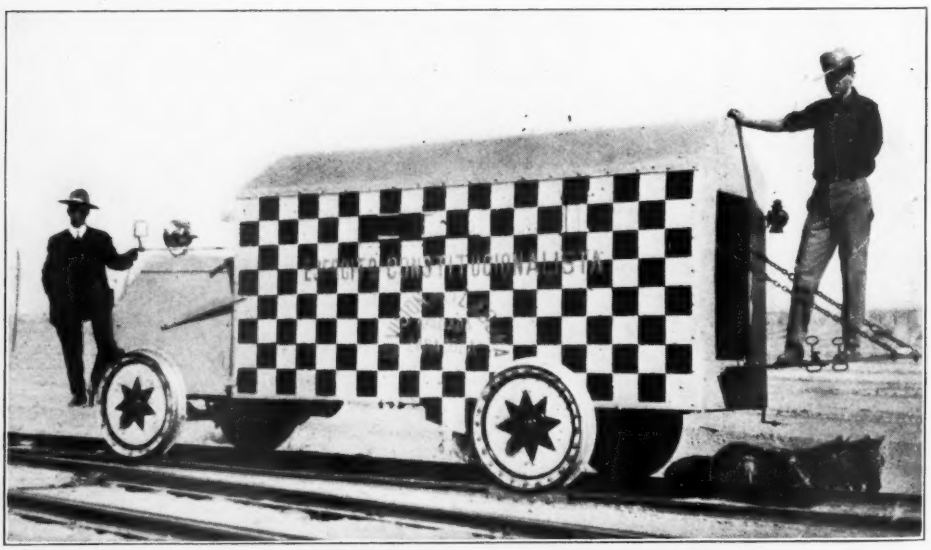
UPPER PICTURE: A KRUPP ARMORED AUTOMOBILE "CRUISER" FOR USE AGAINST AEROPLANES AND DIRIGIBLE BALLOONS. LOWER PICTURE: THE ENGINE-ROOM, PROPELLERS, AND STEERING MECHANISM OF A FRENCH MILITARY DIRIGIBLE

THE MODERN ARMY MULE

AN AUTOMOBILE OF THE TYPE THAT IS USED TO CARRY PROVISIONS AND WAR SUPPLIES FOR THE MOBILIZATION OF THE MILITIA

as hauling light field guns, etc., but for ordinary carriage of bulky supplies the automobile trucks are taking its place because they can carry larger loads at a faster gait and because they are untiring. The truck shown on this page is used by the National Guard of New York.

The armored automobile has become a powerful weapon in modern armies. Such automobiles are fitted with wheels of standard railroad gauge that are designed to run equally well on railroad tracks and on wagon roads or cross-country. These automobiles are armed with machine guns.



A MEXICAN BATTLE CAR

AN ARMORED AUTOMOBILE THAT CAN TRAVEL EQUALLY WELL ON A DIRT ROAD AND ON A RAILROAD. IT CARRIES MACHINE GUNS AND IS OPERATED BY TWO AMERICANS FOR THE MEXICAN CONSTITUTIONALISTS